

JPRS-TND-90-014  
23 AUGUST 1990



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# ***JPRS Report***

# **Nuclear Developments**

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JPRS-TND-90-014

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23 AUGUST 1990

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## SOUTH AFRICA

### Eskom Chief on Future Nuclear Plants

90AF0414A Johannesburg *ENGINEERING NEWS*  
in English 29 Jun 90 p 17

[Interview with Eskom chief executive Dr. Ian McRae by Jill Stanford; place and date not given]

[Excerpt] Dr. Ian McRae's vision of a southern African power grid is becoming a reality. In an *ENGINEERING NEWS* interview Eskom's chief executive speaks of the strengthening co-operation between 12 sub-Saharan countries to create a grid which will bring economic wealth to this region. Closer to home, developments are being made in appropriate technology to extend electricity to consumers in the developing sector and money is being spent on cleaning up the emissions of the older power stations in the eastern Transvaal.

[Stanford] Eskom has just bought ground at Cape St Francis earmarked for South Africa's second nuclear power station. Can you give us any idea of a timetable for such a project and the anticipated price?

[McRae] At the moment we do not have in our expansion plan any date for the next nuclear power station.

The reason we have bought the ground is because nuclear is going to be the long term option as coal eventually runs out.

We are conducting studies on the possibility of producing a nuclear bridging programme, meaning we would introduce an amount of nuclear power into our total generation mix of coal, hydro and import.

South Africa has invested a lot of money in a nuclear infrastructure in terms of nuclear fuel and enrichment.

If we let that infrastructure die and close down Koeberg when it's due for closing down, at a later stage we will have to build it up again as well as the associated skills and expertise.

The disadvantage of a nuclear bridging programme is that it has a premium in terms of cost—nuclear is more expensive than coal.

But because we see nuclear as positive we are going ahead and seeking out suitable nuclear sites.

At the Cape St Francis site we have carried out the initial studies.

It looks like a very favourable site from a number of points of view and we have therefore given the intention that the ground will be used for a nuclear power station, but there's no commitment to it and it's not necessarily the next site.

We are looking around the coast, particularly up the west coast and in the southern Cape area.

We have an option on one site in the southern Cape.

[Stanford] What technology will be used for the project. Is nuclear fusion a possibility?

[McRae] We are looking at the appropriate technology.

I think we will probably consider only the pressurised water reactor of a size of about 1,000 MW.

Our engineering division is in very close contact with the development of nuclear reactors around the world and the small advance reactor may well become a very popular and safe reactor for the future.

A lot of work is going on in Europe and Germany on that and we will keep in touch. [passage omitted]

### Future of Country's Nuclear Power Outlined

90AF0413Z Johannesburg *ENGINEERING NEWS*  
in English 29 Jun 90 pp 18, 38, 39, 40, 46

[Interview with AEC chief executive officer Waldo Stumpf by Jill Stanford; place and date not given]

[Text] The Atomic Energy Corporation (AEC) has supplied the first full reload of fuel to the Koeberg reactors, a process that has been mastered on an industrial scale in relatively few countries in the world. It has now moved on to its next project, that of developing uranium enrichment technologies to make nuclear power more affordable in future. In an interview with the *ENGINEERING NEWS* chief executive officer of the AEC Waldo Stumpf talks of new developments at Pelindaba and Valindaba and outlines the future of nuclear power in South Africa.

[Stanford] Eskom has just bought ground at Cape Saint Francis earmarked for South Africa's second nuclear power station. What will the AEC's involvement be in such a project?

[Stumpf] Nuclear power generation is an Eskom responsibility.

The AEC does not have the responsibility of producing nuclear power although obviously we have a very great interest in it.

It is Eskom's decision where it will build a nuclear power station, when it will build one, what type and what size.

However we are in fairly close contact with Eskom and we provide it with all the support we can upon its request.

This could include items such as site investigations and licensing of sites.

We are involved with Eskom at the moment assisting it with various site investigations.

[Stanford] Can you give us any idea of the likely technology to be used as well as the timetable for such a project and the anticipated price?

[Stumpf] Once again this is an Eskom responsibility and it will decide what type of nuclear reactor to buy.

In terms of world nuclear power it is fairly evident that the water cooled reactors are the most economic and viable reactors at present.

There are two types—the boiling water reactor and the pressurised water reactor.

The Koeberg station is a pressurised water reactor and this type is used mostly throughout the entire world.

I cannot talk on behalf of Eskom as to whether they will once again opt for this type, although I think it could be possible.

[Stanford] If a further nuclear power station is to be built, is it likely to use nuclear fission or nuclear fusion and why?

[Stumpf] It certainly will be a fission reactor.

Nuclear fusion is still a very long way off from technical maturity.

In fact there is not a single reactor in operation in the entire world.

I am an engineer, not a scientist, and I sometimes have the impression that throughout the world the scientists tend to be a bit optimistic as to when nuclear fusion could become viable.

I think that in the second half of the next century we will possibly have nuclear fusion as a power source.

There are still severe technical problems that must be solved, although I think the advantages are so attractive in the long run that the world will continue to carry out investigations.

Hopefully one day we will be able to utilise this enormous source of power which is available to all.

But my personal guess is that it will be the second half of the next century before we will find a commercial unit.

[Stanford] What is the present role of the AEC in the field of power generation?

[Stumpf] The acquisition of the reactor, the installation and even the operation of the reactor is an Eskom responsibility.

The AEC supplies Eskom with various services upon request, and one of the main ones is the fuel supply of Koeberg and hopefully further reactors later.

Fuel supply is a fairly involved process and has been mastered on an industrial scale in relatively few countries of the world.

I would guess between 10 and 15 countries.

The AEC embarked many years ago on a fuel supply programme as one of its strategic programmes and we have recently supplied the first full reload of fuel to Koeberg.

[Stanford] The AEC has succeeded in manufacturing fuel elements which were previously imported for the Koeberg nuclear power station. Can you describe the function of these elements in the Koeberg process?

[Stumpf] There are two reactors at Koeberg.

Each of them contains 157 fuel elements of which about  $\frac{1}{3}$  (or roughly 52 elements) is replaced every cycle which is normally between 12 and 18 months.

About once every year 52 elements are replaced so a new set of 52 fuel elements has to be supplied to each reactor.

The reactor supplies power for a cycle. Then it is shut down for refuelling, which normally takes about two to three months, although overseas where little spare capacity exists this is shortened to a month.

During the shutdown the spent fuel is removed and put into storage pool.

The new reload is introduced and all the elements are shuffled once again in a very precise pattern which is calculated to obtain an even power distribution.

One such reload contains about 25 tons of uranium.

To put that into perspective, the 25 tons of uranium would be the energy equivalent of about 2.5 million tons of coal.

Nuclear fuel is therefore a concentrated source of energy.

The manufacture of fuel elements is a very complex and involved process.

Basically there are four steps.

The first step is to extract the uranium out of the earth and convert that into a suitable form.

This technology is very well established and our mining industry is one of the leaders in the world in uranium extraction.

A concern here is that most of the uranium is associated with our gold, and gold is under severe pressure at the moment.

If gold mines keep on closing it may affect in the long term the utilisation of our uranium resources.

Once the uranium oxide is out of the ground it has to be converted into a gas, uranium hexafluoride.

This is done at a plant we have at the AEC.

The third step is to enrich the uranium hexafluoride gas in its U-235 isotope concentration.

Natural uranium contains 0.71 percent of the uranium 235 isotope and that's the important one for power generation.

This concentration has to be increased to about 3.25 percent U-235 for Koeberg.

This is a very difficult process and is done in our enrichment plant, the so-called semi-commercial enrichment plant.

The final step is to take this enriched uranium hexafluoride gas and convert it into a suitable form as a fuel element and this goes into the nuclear reactor.

Of the four steps, the first is handled by the mining industry and the latter three steps by the AEC.

I would say that the main area of involvement we have is in supplying this fuel to Koeberg.

[Stanford] What do you intend doing with spent fuel elements? Is there any chance that you will be able to recycle the spent fuel elements and if so, how, where and why will this be done?

[Stumpf] There are two things that could happen to spent fuel elements.

A decision could be taken to store them or alternatively to reprocess them.

There is still quite a bit of potential energy left in the spent fuel elements because they can't be utilised down to zero in the reactor.

Reprocessing is a very expensive process and is only economically viable if a country has a very large nuclear programme such as that found in France and some other overseas countries.

Once again what happens to the spent fuel is Eskom's decision because the moment we supply the fuel to Koeberg it becomes Eskom's property.

But I would certainly say that in the foreseeable future, until South Africa has a much larger nuclear programme, the spent fuel from Koeberg will be stored and not reprocessed, as it will not be economically viable at this stage.

South Africa will certainly not build a reprocessing plant within the next few decades.

France, Britain and a few other countries have industrial plants where they reprocess fuel for themselves or for other countries that have very large nuclear power programmes.

One could send this spent fuel over there to be reprocessed, extract the remaining uranium and plutonium in the fuel element and put it back into a new fuel element.

The fuel as it exits from the reactor still has some decay heat so it has to be stored underwater for some time, roughly between seven and 10 years.

The Koeberg reactors have storage pools built next to the reactor with enough space to store the spent fuel.

It could remain in the pool if there is enough space and the Koeberg reactor does have a fair amount of space.

Alternatively once this point is reached it is quite feasible to store it dry above ground in metal flasks.

The fuel elements are placed inside the metal flasks and put on a concrete slab in a building where they stand until a decision is taken one day to reprocess them.

Dry storage is a technology that's being carried out overseas and it's not too expensive.

One important thing I must point out is that, although South Africa hasn't signed the Non-Proliferation Treaty [NPT], there are a number of facilities that are under safeguards by the International Atomic Energy Agency.

The Koeberg reactor is one of them.

This means that the moment the fuel-elements enter Koeberg, they also come under safeguards and remain under safeguards forever.

Even if Eskom were to store them above ground they would still be under safeguards.

They cannot be diverted for any other means and remain under international safeguards.

[Stanford] The State President has closed the pilot plant for the manufacture of highly enriched uranium. What was the reason for this and what will become of that pilot plant?

[Stumpf] When we developed our enrichment process many years ago the first step was to build a pilot plant.

It had two purposes—one was to demonstrate the enrichment process and the second to produce some medium enriched material for our Safari research reactor.

The Koeberg reactors actually use very low enriched material. The research reactor uses medium enriched, about 45 percent.

The pilot plant performed very well and did produce a satisfactory amount of material for our research reactor.

But because it was not large enough to supply Koeberg in addition to our own small reactor we built the semi-commercial enrichment plant.

We call the larger plant semi-commercial because it is not so large that it equals the very large plants overseas.

It's more than sufficient however to supply the needs of the two Koeberg reactors.

It came into operation in September 1988 and although we have a few teething problems here and there it is running fairly well and has produced a fair amount of material for Koeberg.

We were then faced with a decision of whether there was any incentive to keep the pilot plant in further operation.

The decision that we arrived at was no.

It was a costly operation to run and there was no incentive to continue.

Firstly we had demonstrated the enrichment process and the large plant was running and secondly we had stockpiled a fair amount of material for our research reactor.

The decision to close the pilot plant on February 1 this year was done in consultation with the Government.

The plant is being slowly dismantled because we need the buildings for other operations.

[Stanford] The State President has left intact the plant for the production of enriched uranium. What will be the role of this plant and is there any chance of the products being manufactured here also being exported?

[Stumpf] This plant was built solely to supply Koeberg or Koeberg type of reactors with low enriched uranium.

It's a small plant in terms of world standards.

Its capacity is 300 ton separate work units a year (a 300 ton SWU a year plant) whereas many of the big commercial units in France and America are 10,000 tons SWU a year plants.

This is why we call ours a semi-commercial plant; it's actually fairly small in world standards but produces enough to supply between three and up to four Koeberg type reactors, so there's a bit of spare capacity available.

Once the plant has climbed its learning curve and is running smoothly at full capacity, which we hope will be within a year or two, the question will arise as to what will happen to the spare capacity.

At this stage, one could certainly contemplate exporting low enriched uranium although I must point out that to enter the world market of nuclear fuel supply is not easy.

There is a tremendous over capacity and a lot of competition out there.

It certainly will not be easy to compete with the very large plants overseas and we may have to store the excess material for future use.

[Stanford] Besides power generation, where do you envisage the enriched uranium from this production plant being used?

[Stumpf] Nowhere else. This is very low enriched uranium.

It cannot even be used for our research reactor which uses medium enriched material, so it is basically for Koeberg or Koeberg type of reactors.

Our first priority is to supply Koeberg and, if any excess material becomes available, the possibility of exporting it or stockpiling it for future use will be considered.

[Stanford] What else is happening at Pelindaba and Valindaba?

[Stumpf] One of our main activities is the production of fuel for Koeberg.

However this is not all the AEC does.

The AEC is the national nuclear research centre because in addition to our production work there's also a lot of R&D work being done here in the general application of nuclear technology to satisfy the needs of our country.

The AEC has embarked on a commercialisation programme which includes supplying our technology and knowhow, built up over many years, back to South African industry on a commercial basis.

And we have a very wide range of technologies covering a wide range of needs.

As one example we are supplying increasing numbers of isotopes for local medical and also for industrial use.

We do not supply all the isotopes used in South Africa but those that can be economically made here.

We also have a very wide range of spin-off technologies that we supply to industry.

One general field that we are certainly gearing ourselves up to is the field of pollution control.

We feel that in the general field of pollution control and possibly more in the field of air pollution, we have a number of very attractive technologies that we can offer and we are in close co-operation with various organisations, such as the primary metal industries, the ferro-alloy industries, Eskom and others.

Furthermore, we have a very wide ranging area of other technologies which we've had to build up over the past like specialised plating services, also offered to industry on a commercial basis.

The AEC is increasingly covering its own funds by external income.

For instance last year total income from external sources, and I am talking of non-government funding, was just under R200-million and we are certainly working very hard on increasing this proportion.

Our policy has been that the Government has funded the development of all this technology over many years and we now have the responsibility to plough it back to satisfy the requirements of South African industry.

We have also created a marketing and commercialisation department which is very active in this direction.



In fact on June 26 we launched what we call the "new AEC" at a function at the Johannesburg Sun.

This is the official launch of the AEC as a commercially viable organisation in supplying not only nuclear fuel, but other technologies which are nuclear related.

We started off in the early 1960s as a purely research organisation and we have transformed ourselves into a mainly production organisation in which research plays a supporting role.

Further, there is a lot of work going on worldwide in developing cheaper enrichment technology.

The enrichment technologies that are used in the world presently, are fairly capital intensive and therefore contribute to some degree to the cost of electricity by nuclear means.

The enrichment step is one of the major cost items—certainly by far the most expensive of the four steps I mentioned earlier.

So there is a worldwide effort in developing far cheaper enrichment technologies to make nuclear power more competitive in future.

We at the AEC are looking at two enrichment techniques: one is the so-called centrifuge development which has already been demonstrated overseas and, secondly, we have an alternative technology under investigation which makes use of laser.

There's no such plant running in the world yet but there is a lot of work going on worldwide on laser enrichment technology and the AEC is looking at a certain variation of one of the laser technologies.

We have had some promising laboratory results on both of these processes and very soon, hopefully within the next year or two, we will have to decide on concentrating all our efforts on one of them, developing it into a pilot plant and then hopefully later into a full scale commercial plant.

Our present uranium enrichment technology operates very well but it is also not one of the cheapest in the world. There is an incentive to replace it with cheaper technology.

In the long term, South Africa should be looking not only at supplying fuel for local use but possibly entering the world market in terms of exporting our uranium product in an upgraded form.

But then we need cheap enrichment technology so our objective is to equal at least on a commercial basis the world prices on enrichment technology.

[Stanford] What is the future of nuclear power?

[Stumpf] The Chernobyl accident and also the earlier one in America, the Three Mile Island accident, have certainly focussed attention on producing much safer reactors.

I think nuclear power for many years was seen as the villain of the world in terms of environmental concerns.

But I think the scene has changed completely in that people have accepted that power generation by coal produces air pollution.

It is now a worldwide belief that nuclear power is possibly not the villain it was always assumed to be and can be seen as a relatively "clean" source of energy.

Clean in inverted commas because there is no source of power that is really clean.

Even for hydroelectric power we have to build a huge dam and transport electricity by putting pylons across the countryside.

If you are looking for absolutely clean power, even solar power is not so clean.

Certainly a small solar panel to run your radio or telephone does not cause any visual pollution but if we were talking of supplying the whole of South Africa's needs, a solar panel farm of roughly 800 km<sup>2</sup> would be needed, that is about the size of Pretoria.

This you cannot do in the desert areas because solar panels, once they get dust on them, lose their efficiency.

You would virtually have to sterilise good agricultural land by covering it with a concrete slab and installing solar panels that have to rotate with the sun.

I think world public opinion, which was previously fairly negative towards nuclear power, has become far more balanced.

I wouldn't say that it's actively pro-nuclear yet. In some countries possibly yes, but in general it's fairly well balanced because the public has accepted that air pollution from fossil fuel does present some problem.

There is the acid rain effect, effects of smoke, ash and soot and the so-called greenhouse effect.

This is where nuclear power can play a significant role.

A nuclear power station like Koeberg under normal conditions doesn't produce any gaseous effluents so there's no air pollution involved.

All the effluents are either liquid or solid and are very small in volume.

I mentioned earlier that to supply one of the Koeberg reactors, 25 tons of uranium is required each year and that is basically your high level waste a year from such a reactor.

There is further waste called medium and low level waste but that is easy to handle and once again produced in small volumes.

I think another factor that the world has woken up to is that we are extremely wasteful in terms of energy efficiency.

Maybe our electric power has been too cheap in the past; it's too easy to just switch on a light and leave it on.

South Africa has a long way to go in increasing our efficiency of energy usage.

This is obviously a very attractive way of reducing air pollution because we just use less electricity and don't actually have to build any further power plant.

Thirdly, I must confirm that South Africa certainly has a large reserve of fairly cheap coal. But this is still finite and present indications are that our coal for power generation may run out towards the middle of next century.

When the coal runs out there are only two alternatives for South Africa.

One is to import hydroelectric power from the north where there is a lot of potential, especially from Zaire.

But obviously we are relying on importing energy and will need stable political systems otherwise we could be cut off.

The only alternative indigenous source would be nuclear power and South Africa is fortunate enough to have large resources of uranium.

[Stanford] What percentage of electricity is generated by nuclear means in South Africa at the moment?

[Stumpf] South Africa generates 5.6 percent of its electricity by nuclear means.

[Stanford] What percentage of electricity do you envisage will be generated by nuclear means say in the year 2020?

[Stumpf] This is a matter that Eskom is investigating presently.

If South Africa does decide that once our coal is depleted we will have a substantial nuclear programme, it means that we will probably have to phase in nuclear technology.

We cannot wait until the year 2040 for example and then suddenly find that we have to build a massive infrastructure to accommodate a large number of nuclear stations very quickly.

We are probably looking at a phasing in process but exactly what proportion would be in use by the year 2020 is a matter that is being investigated by Eskom.

[Stanford] Why are we going the nuclear route once again? Is it not going to be above the heads of local suppliers?

[Stumpf] In terms of energy supply you have to think very long term.

To build any coal-fired power station is a very long term project; you have to develop the mine and build the power station.

Likewise, to plan and build a nuclear power station may take up to 10 years.

You have to think very far ahead and I think this is basically why the nuclear route is considered because we do foresee that at some stage in future the coal is going to run out.

This is why nuclear is still a viable option for South Africa and I think it will become more important in future.

[Stanford] What was the percentage local content of Koeberg nuclear power station which used French technology?

[Stumpf] The local content was between 35 percent and 40 percent mainly on the civil side.

I think South African industry was quite capable of supplying this sort of input.

If you look at countries like Korea, Japan and Taiwan—countries that have got fairly ambitious nuclear programmes because they have no other forms of energy—we see local content becoming increasingly important as more and more stations are built.

I think we'll probably find that situation developing here too.

The next station may once again be 35 percent to 40 percent, maybe marginally more.

But I don't think we should ever expect to achieve 100 percent local content because that is not economical.

Even on the coal-fired power stations this is not the case, although they certainly have a very high local content.

So it's a matter of phrasing in new technology and introducing local content as it is economically justified.

Once South Africa embarks on an ongoing nuclear programme the local content will gradually increase up to a certain level.

But this would have to be done on economic grounds.

[Stanford] Do you think we'll use French technology once again?

[Stumpf] Once again this is an Eskom decision. I can only say that in terms of world nuclear technology, France is one of the world leaders.

[Stanford] What have been the shortcomings of Koeberg nuclear power plant?

[Stumpf] As far as I am aware there are no significant shortcomings.

It is running very well and is supplying power at a very constant pace to the power grid.

[Stanford] Are you going to become signatories to the Non-Proliferation Treaty?

[Stumpf] The decision to sign the NPT is a government decision, although the AEC is consulted.

Our present Government is reviewing its position.

It is fairly high on the agenda but I wouldn't like to comment further.



### Underground Nuclear Explosion in China Reported

*AU1608104790 Paris AFP in English 1019 GMT  
16 Aug 90*

[Text] Stockholm, August 16 (AFP)—A Swedish military seismic observatory said it recorded a tremor on Thursday that appeared to stem from an underground nuclear explosion in China, the observatory said. The Hagfors observatory said the explosion came at 0500 GMT and indicated it came from a bomb of 50 to 200 kilotons, if the explosion took place in rock.

China usually tests its nuclear weapons in the Lop-Nor desert, in northwest China.

On May 26, the observatory recorded the first Chinese nuclear test since September 1988.

### Link to Saudi Arabia Based on Weapons Sales

*HK2107023990 Hong Kong SOUTH CHINA  
MORNING POST in English 21 Jul 90 p 16*

[Editorial: "China Strengthens Its Ties With Islam"]

[Excerpts] China has achieved its third diplomatic coup this month, with the imminent establishment of full ties with Saudi Arabia, an ardently anti-communist Islamic society which has no formal relations with any other socialist country. The success comes hard on the heel of the announcement that relations with Indonesia will be restored on August 8, and the unilateral decision by Japan to resume loans to China suspended last year after the June 4 crushing of the democracy movement.

The significance of the latest diplomatic triumph is being underscored by the Foreign Minister Mr Qian Qichen's hastily arranged visit to Riyadh. The Sino-Saudi friendship move has deprived Taiwan of a major ally because, of the 23 countries which officially recognize the Taipei Government, Riyadh has been among the most reliable because its anti-communism mirrors that of Taipei. Not only does Saudi Arabia supply a third of Taiwan's crude oil, its unwavering support of the Kuomintang Government helped preserve the myth that some countries with conservative ideologies will always resist Beijing. But two years ago, one of the pillars of Taipei's defence weakened when Chinese arms sales convinced Riyadh of the advantage it could gain from switching recognition to Beijing. Earnest negotiations for normalised relations between China and Saudi Arabia started in May, when Chinese Communist Party official Mr Seypidin Aziz, of the Uighur minority, visited Riyadh. The momentum became irreversible last week when Saudi Arabia dispatched its ambassador to Washington, Prince Bandar bin Sultan, on a mission to Beijing, 19 months after the countries had agreed to open trade offices in each other's capital. [passage omitted]

Trade between China and Saudi Arabia rose to US\$300 million in 1988 as Beijing ignored the tacit international ban on the sale of nuclear-capable missiles. The Chinese

installation of CSS2 rockets with a range of 3,500 kilometres in Saudi Arabia was completed, despite protests from the United States, whose Congress had opted against selling nuclear-capable bombers and attack aircraft to Riyadh under pressure from the pro-Israeli lobby. Being the world's fourth largest supplier of military hardware, China is now using arms sales to gain diplomatic influence—and the Saudi response is proof that the gambit works. [passage omitted]

### Li Peng, French Visitors Discuss Daya Bay Plant

*OW0208151490 Beijing XINHUA in English  
1436 GMT 2 Aug 90*

[Text] Beijing, August 2 (XINHUA)—Chinese Premier Li Peng met here today with Jean-Claude Leny, chairman of the board of directors of the Framatome Co. Ltd. of France, and his party.

The two sides held talks on the development of nuclear power and the cooperation in constructing the Daya Bay Nuclear Power Plant in Guangdong.

Having visited China for many times, Leny is here as guest of China's Ministry of Energy Resources this time. The Framatome Co. Ltd. is the supplier of the equipment of nuclear island of the Daya Bay Nuclear Power Plant.

After the meeting, the premier feted the French guests.

Attending the meeting and banquet was Zou Jiahua, minister in charge of the State Planning Commission.

### Shanghai Source for Qinshan Plant Equipment

*HK1207133590 Beijing CEI Database in English  
12 Jul 90*

[Text] Shanghai (CEI)—Shanghai, the largest industrial city in China, has set up an industrial system capable of producing nuclear power station equipment.

According to authoritative sources, over half of the equipment used in the 300,000-kw Qinshan Nuclear Power Station in east China's Zhejiang Province were produced in Shanghai. They include the three parts of nuclear boiler, namely the pressure vessel, steam evaporator, and voltage regulator.

Now Shanghai has several workshops specializing in nuclear power equipment production with complete and advanced production technology, the sources added.

### Nuclear Industry Expands Civilian Production

*HK1707092190 Hong Kong ZHONGGUO TONGXUN  
SHE in Chinese 0852 GMT 9 Jul 90*

["China's Nuclear Industry Effects Major Changes in Its Development"—ZHONGGUO TONGXUN SHE headline]

[Text] Beijing, 9 Jul (ZHONGGUO TONGXUN SHE)—According to sources in the China Nuclear Industry Corporation, after several years' adjustment and product changes, the proportion of civilian products has been gradually increased.

Last year, the total output value produced by the China Nuclear Industry Corporation was about 1.7 billion yuan, and the output value of civilian products reached 710 million yuan, accounting for 40 percent of the corporation's total output value. In the last five years, the nuclear industry corporation developed 98 new products, including such series products as fire alarms and rare-earth chemicals.

As the Qinshan Nuclear Power Station and the Daya Bay Nuclear Power Station will soon be completed and put into operation, civilian production will be further expanded. It is expected that by the end of this century, civilian products will account for 80 percent of the total output of China's nuclear industry. At present, the nuclear industry corporation is surveying the construction site and conducting relevant investigations for construction of a nuclear power plant in Northeast China.

#### **Pulse Nuclear Reactor Successfully Operated**

*HK0308061090 Beijing CHINA DAILY in English  
3 Aug 90 p 2*

[Text] China has become the second country to master the techniques needed for designing and manufacturing a small reactor known as the pulse nuclear reactor.

A spokesman for the China National Nuclear Corporation (CNNC) said the successful operation of the one-megawatt reactor—achieved on Sunday last week at a CNNC research institute—meant that China had reached new heights in the field of high-tech nuclear research.

He said China had followed the United States in mastering the techniques needed for designing and manufacturing this kind of reactor.

Installation of the reactor began in January 1987 on the basis of scientific research conducted by the corporation's No 1 Research and Design Institute in Southwest China's Sichuan Province, the spokesman said.

The work was completed at the end of last year and all the equipment had been tested by the end of January this year.

The spokesman said the pulse nuclear reactor would not cause environmental pollution and would be an ideal reactor for use in urban areas and on university campuses.

## INDONESIA

**Import of Japanese, U.S. Nuclear Plants Planned***OW1807181790 Tokyo KYODO in English 1222 GMT 18 Jul 90*

[Text] Tokyo, July 18 KYODO—Three Japanese companies plan to export a new type of nuclear power plant to Indonesia, jointly with General Electric Co. (GE) of the United States, industry sources said Wednesday.

Mitsui and Co., Toshiba Corp. and Hitachi Ltd. are considering exporting several boiling water reactors (BWR), called S-BWR, now under development by GE. The planned exports, if they materialize, will be the first ever by Japanese companies. The sources said the export plan came against the backdrop of a shrinking market for nuclear power plants in Japan amid growing concerns over the danger posed by nuclear power generation.

The deal, estimated to be worth more than 1 trillion yen, will be equally beneficial to Indonesia, which wants to introduce nuclear power plants in order to put aside more domestically produced crude oil for exports and earn more foreign currency, they said. Indonesian President Suharto had announced a plan to build several nuclear power plants in the future to supply about 7 million kilowatts of electricity through nuclear power generation.

The S-BWR, whose development is also participated in by engineers from the three firms and officials from the Indonesian Government, is expected to be priced at around 200 billion yen per reactor, the sources said.

The U.S.-Japan consortium, however, is not the only one with an eye on the Indonesian plan. Mitsubishi Heavy Industry and Westinghouse Electric Co. of the United States also have a plan to export a simplified version of pressurized water reactors (PWRs), called AS600, to that country, giving rise to the possibility of fierce rivalry with the four-company group in bidding for the deal, slated by 1996, according to the sources.

## NORTH KOREA

**Talks With U.S. Linked to Nuclear Inspection***OW2107031190 Tokyo KYODO in English 0250 GMT 21 Jul 90*

[Text] Tokyo, July 21 KYODO—North Korea has proposed direct talks with the United States as a precondition to accepting on-site nuclear inspections by the International Atomic Energy Authority (IAEA), the Foreign Ministry and other sources said Saturday.

The North Korean proposal was made in the middle of this month when Pyongyang sent a delegation to the IAEA in Vienna. The proposal called for direct talks with the U.S. Government to obtain a U.S. guarantee that nuclear weapons would not be used against North Korea, the sources said. North Korea ratified the 1970 nuclear nonproliferation treaty but did not conclude a related accord with the IAEA that

allows the agency to make on-site inspections to determine whether a country without nuclear arms uses nuclear substances to make nuclear weapons. In response to an IAEA advisory to accept the inspection, North Korea demanded that it would comply but only if the U.S. promised not to launch a nuclear attack against the country and to withdraw nuclear arms from South Korea.

In Washington, U.S. sources also confirmed the report from Tokyo, but refused further comment on it. According to data obtained by U.S. military satellites and other means, North Korea is constructing nuclear development facilities at a site some 90 kilometers north of Pyongyang. It is strongly suspected that they include spent nuclear fuel cycling facilities. Experts said the cycling facilities may start operating in the fall of next year. Foreign Ministry sources said they view the North Korean proposal for direct talks with the U.S. as a push for breakthroughs in the Pyongyang-Washington talks. North Korea agreed in May to return to the U.S. the remains of five American soldiers killed in the Korean war. A U.S. State Department official welcomed the decision as a positive step in bilateral relations.

**USSR Suspends Help to Nuclear Plant***SK2107100990 Seoul TONG-A ILBO in Korean 21 Jul 90 p 2*

[Report by correspondent Yi Nak-yon from Tokyo]

[Text] The Japanese daily YOMIURI SHIMBUN dated 21 July, citing remarks by a U.S. nuclear expert in Washington, reports that the Soviet Union has recently suspended assisting North Korea in the construction of nuclear power plant facilities.

According to YOMIURI SHIMBUN, this nuclear expert also observed that the Soviet Union is expected to continue with this assistance freeze until North Korea signs an agreement accepting the inspection of its nuclear power facilities by the International Atomic Energy Agency (IAEA).

The Soviet Union has assisted North Korea in constructing power plant facilities equipped with four nuclear reactors based on its agreement with North Korea signed in 1985.

North Korea signed the Nuclear Nonproliferation Treaty in 1985, but has been refusing to sign the verification agreement under the pretext that the United States has not eliminated the nuclear threat against it.

## SOUTH KOREA

**Yi Sang-hun, France View DPRK Nuclear Arms***SK0208123890 Seoul SEOUL SINMUN in Korean 2 Aug 90 p 2*

[Report by correspondent Kim Chin-chon from France]

[Text] It has been learned that France will actively exercise its influence, including diplomatic efforts, to stop North Korea from producing nuclear weapons.

At noon (local time) on 1 August in a meeting between French Prime Minister Michel Rocard and visiting ROK Minister of Defense Yi Sang-hun, Prime Minister Rocard said, "It is natural for Korea to be apprehensive over the issue of North Korea possessing and producing nuclear weapons." He also revealed, "France will actively exercise its influence through all international organizations, such as the International Atomic Energy Agency and the Conference on Security and Cooperation in Europe (CSCE), to make North Korea give up its attempt to produce nuclear weapons."

Regarding North and South Korean relations, Prime Minister Rocard pledged, "We will make diplomatic efforts so that the detente between East and West through reform and openness can also be achieved on the Korean peninsula." He said, "We will work to create an international atmosphere to induce North Korea to achieve democratization and openness."

## TAIWAN

### Buying Uranium From Mainland Ruled Out

OW2607180890 Taipei CNA in English 1514 GMT  
26 Jul 90

[Text] Taichung, Central Taiwan, July 26 (CNA)—The Republic of China's state-run Taiwan Power Co. [Taipower] Thursday [26 July] ruled out buying uranium from the China mainland, saying it would be "too sensitive" in light of the current situation across the Taiwan Strait.

Taipower Vice President Chen Jung-po, answering questions at the Taiwan provincial assembly, stressed that it was unfeasible for his company to buy mainland uranium because it might violate the nuclear non-proliferation treaty, even though Taipei was not a signatory to the document.

Chen Chung-hsin, director of the Taiwan Supply Bureau, told the assembly that his bureau had been approached more than a month ago by a mainland company which

offered to sell uranium to Taipower and asked the bureau to act as a go-between.

In view of the government's current policy toward the mainland and other considerations, Chen said his bureau simply informed the government and Taipower of the offer and did not respond to the mainland company.

### Stalled Nuclear Power Plant Project Supported

OW1108043690 Taipei CNA in English 0247 GMT  
11 Aug 90

[Text] Taipei, Aug. 11 (CNA)—Amidst fears of an energy crisis, the Taiwan Power Company is prepared to resume the construction project of its fourth nuclear power plant, which has been stalled for 10 years by pressure from various groups.

Taipower would invite legislators and their aides to visit Kungliao in Taipei County, the selected construction site of the controversial nuclear power plant.

The visit, a Taipower spokesman said, would help them understand the importance of the nuclear power plant to the Republic of China's further economic development.

During their visit, Taipower nuclear engineers would explain to the lawmakers how the nuclear power plant would operate so as to help alleviate fears about possible nuclear accidents.

Taipower said it had not ceased its efforts to communicate with the people of Kungliao and would continue to do so.

In order to better understand the public's opinion, Taipower will make a public survey next month in Kungliao.

In a cabinet meeting Thursday Premier Hao Po-tsun asked that the nuclear power plant be constructed to cope with the anticipated energy shortage, but that people's fears must first be put to rest.



## BULGARIA

**IAEA Deputy Director Inspects Nuclear Reactors***AU2007205790 Sofia BTA in English 1939 GMT  
20 Jul 90*

[Text] Sofia, 20 Jul (BTA)—Mr Maurice Rosain, deputy director general of the International Atomic Energy Agency (IAEA), paid a visit here. He said that the IAEA had sent a group of experts to Bulgaria to familiarize themselves with the problems of the Kozloduy Nuclear Power Plant and the construction of the Belene Nuclear Power Plant. They will see for themselves if the platforms are safe enough for exploitation and will check their seismic safety.

In October another group of IAEA experts will inspect the new reactors in Kozloduy and check every aspect of their exploitation from the management to the ability of the nuclear power plant operators to do their work, from the reliability of the radiation protection to the measures to be taken in case of an accident.

Today Mr Rosain had a meeting with Mr Chudomir Aleksandrov, deputy chairman of the Council of Ministers.

**Romanian Call for Reactor Shutdown 'Groundless'***AU2907184390 Sofia Domestic Service in Bulgarian  
1730 GMT 29 Jul 90*

[Text] An announcement disseminated by ROMPRES on the results of the meeting of a Bulgarian-Romanian joint government commission on problems related to the work of the Kozloduy Nuclear Power Plant expresses the demand of the Romanian side that all four reactors of the Kozloduy plant be temporarily put out of operation.

According to the Romanian side, the four first generation 440 megawatt power units that operate in Kozloduy should be put out of operation in order to investigate their reliability, while the remaining power units should be improved. The members of the Romanian commission are also reported to have urged that the building of two new 1,000 megawatt power units in Kozloduy should be discontinued, and that Bulgaria should altogether renounce the construction of similar power plants in the vicinity of the Romanian border.

In connection with the fact that the Bulgarian delegation described such demands as totally groundless, the Romanian delegation considers it necessary to invite the Soviet experts with whose assistance the Kozloduy Nuclear Power Station had been built to participate in the talks. The announcement further points out that it would be expedient to seek the opinion of international experts on the state of the Bulgarian nuclear power station.

**Government Sets Up Nuclear Safety Research Body***AU2907135990 Sofia DUMA in Bulgarian 23 Jul 90 p 2*

[Text] An interdepartmental coordinating council, under the Ministry of the Environment, is being set up for scientific research in the field of radiation and ecological monitoring, and radiation protection.

"One of the most important lessons we drew from the Chernobyl accident," said senior scientific officer Valentin Bosevski, deputy minister of the environment, "was the need to set up a national system of radiation and nuclear safety, uniting the efforts of specialists and material and equipment facilities."

The coordinating council is a step in this direction. It will work on solving the chief radiation ecology problems which Bulgaria faces, with the aim of overcoming monopoly attitudes and departmental fragmentation.

An overall check has already been completed of the condition of the Kozloduy Nuclear Power Plant, with the participation of experts from various public movements. The results of the check will be presented to the government.

Specialists from the International Atomic Energy Agency (IAEA) also made proposals on further actions to be taken at the Kozloduy Nuclear Power Plant in connection with studies and evaluations to establish whether the reactors can withstand much stronger earth tremors than those which have so far occurred. In October this year, another group of IAEA experts will conduct an examination of the new reactors at Kozloduy.

Last week the IAEA representatives at Belene also completed their work.

The pollution caused during the working of the uranium deposits in Bulgaria will be a further field of the coordinating council's work. The council will also deal with so-called electromagnetic pollution by radio waves.

## CZECHOSLOVAKIA

**Austrian Energy Aid Offer Viewed 'Skeptically'***AU0108130690 Prague ZEMEDLSKE NOVINY  
in Czech 27 Jul 90 p 2*

[CTK report: "Austrian Energy With Question Marks"]

[Text] Bratislava—As a consideration for closing the V-1 nuclear power plant in Jaslovské Bohunice, Austria has proposed to assist the CSFR with electric power. Engineer Karel Cesnek, Slovak Power Industries general director deputy, expressed his opinion on this proposal.

He said in his declaration, among other things, that in view of the known situation in Austrian power production, we regard the relatively large supply of 880 megawatts from Austria skeptically. It was later confirmed by

Osterreichische Elektrizitätswirtschaft AG (Verbundgesellschaft), the most preeminent element of Austrian power production, that the assistance may apply to a very short period of two weeks in a year, during which the technological situation in the Jaslovské Bohunice nuclear power plant could be evaluated by independent foreign experts. There is, therefore, no solution to the long-term power supply problem, and the proposals presented do not contain the question of financial arrangements. Moreover, the existing power lines that are in use allow only the transfer of up to 550 megawatts. It is also necessary to point out the fact that the existing power lines are used for energy transfers of up to 400 megawatts between Poland and Austria. Should such a transfer be cut, a financial compensation to Poland would have to be negotiated.

The most serious problem, however, lies in the transformation of the Jaslovské Bohunice nuclear power plant output to a voltage other than that which can be used in cooperation between Austria and the CSFR. A time-consuming transformation from 400 kilovolts to 220 kilovolts would have to be worked out.

#### **Nuclear Energy Policy Discussed in Venice**

*AU0708103690 Prague HOSPODARSKE NOVINY  
in Czech 3 Aug 90 p 2*

[Jaroslava Markova article: "Nuclear Energy Policy Discussed in Venice"]

[Text] The doubts expressed by our Austrian neighbors about the safety of the Jaslovské Bohunice nuclear power plant have been filling the pages of newspapers for several weeks. Our papers and the "Viennese" dailies are not the only ones interested in this issue. Therefore, the statement made by Austrian Chancellor Franz Vranitzky at a news conference held in Venice on Wednesday [1 August] at the end of the Pentagonal Group meeting was not very surprising to journalists. He emphasized that his country is the only one of the "five" states which does not utilize nuclear energy. Therefore, the Austrian side is conducting an intensive dialogue to ensure that, in places where there is a certain degree of uncertainty, electricity ceases to be produced in nuclear power stations.

Nevertheless, not even this—shall we say tactfully veiled statement—left any of those present in any doubt about whom he had in mind. Later he announced at the recently concluded meeting of the heads of government, the proposal that the Pentagonal Group should make the abrogation of nuclear energy policy its long-term aim. He recommended the establishment of a subgroup with the working name "Energy and the Environment." He added that he realizes the majority of partner states cannot change their method of producing energy from year to year, and that many of them produce electricity with other resources harmful to the environment; therefore, a proposal was made which, so far, has not been discussed.

As Czechoslovak Premier Marian Calfa said in an improvised interview with journalists, the problem surrounding nuclear power plants also took up three-quarters of his bilateral talks with the Austrian chancellor. M. Calfa told F. Vranitzky that the Czechoslovak Government, first and foremost, does not understand the Austrian approach because it underestimates our leading representatives. If the Czechoslovak Government came to the conclusion that the operation of any nuclear power plant, or of any of its blocks, would threaten human lives, then it has enough common sense and responsibility toward its own people to immediately suspend operations. To date, it does not feel this way. According to M. Calfa, the Austrian chancellor accepted this approach. He was interested in the status of Austrian experts in the inquiry into safety at Jaslovské Bohunice, and both partners agreed that they will have equal status with the experts from other countries. Talks will be held about the controversial points of view. "If the independent expert analyses recommend that production be halted at the plant or in one of the blocks, then we will halt production," said M. Calfa.

Although F. Vranitzky's proposal to abrogate producing nuclear energy in the future seemed to be a rather demonstrative gesture and evoked in me the importunate feeling that this was tactically and psychologically well chosen pre-election propaganda, I asked M. Calfa what this utopian idea means for us.

"Unlike Mr. Vranitzky, I do not have such an imagination or enough knowledge to be able to declare that future electricity production does not depend on the atom," said M. Calfa. He continued: "Perhaps this will involve a completely new form of technology. I would leave it up to the experts. As our knowledge develops, it will obviously be adapted to the technology for electricity production as it has been in every other branch of industry. Unfortunately, in my opinion the Austrian side in particular is not only causing technological problems in the nuclear power issue, but it is also causing moral, ethical, psychological, and perhaps political problems. As soon as we start combining all these elements with technology, we can exchange views, but we do not have to agree. I would leave it to the objective criteria which technologists, in particular, can give us.

The nuclear safety issue was also the subject of other discussions involving our delegation in Venice. M. Calfa held talks with Italian industrialists, who were intensely interested in the reconstruction of the Czechoslovak enterprises manufacturing equipment for nuclear power plants and in participating in their reconstruction using safe Italian and French technology. He appealed to the Italian industrialists to turn directly to our national governments. N. Peedeschi, director general of the IRI [Institute for Industrial Reconstruction] state holding company, showed a keen interest in cooperating with us in the sphere of nuclear power plant safety, particularly in the introduction of a quality control system.

Energy policy and its raw material provision was one of the most frequently discussed issues within the joint meeting involving the heads of government. In his speech, M. Calfa highlighted the fact that the problems of diversification in natural gas and oil supplies are not a phenomenon exclusive to us, but that they concern practically all the Pentagonal countries. Therefore, he proposed that the participating countries adopt an accelerated course of action toward studying the possibilities for diversification in gas and oil supplies, diversification which would limit our vulnerability.

A Czechoslovak proposal to establish a new working group oriented toward issues associated with the transportation of energy industry raw materials and their rational utilization was approved within the framework of the Pentagonal meeting. Czechoslovakia will become this group's coordinator. We will try to ensure that this group involves itself with the speedy drafting of a strategy for reducing one-sided dependence on supplies of natural gas and oil from one source.

Our premier's other talks in this regard are not without interest. These talks were held with representatives from the ENI [National Hydrocarbons Authority] company which is involved in the transportation of Algerian oil and gas. The Italian company also displayed an interest in conveying these raw materials across its territory to our country. This month, a joint group of experts is supposed to discuss the technical conditions connected with this project. According to Zbynek Fiala, the government's press spokesman, an idea was also discussed during the talks that, if the ENI company displayed an interest in establishing a network of AGIP [Italian National Oil Company] gasoline pumps in our country, the Czechoslovak side would decisively support the endeavor.

The results of the Venice talks have generally been considered positive. One can only hope that the "energy policy" intentions in which our countries are eminently interested do not just remain a hope. As Claudio Martelli, Italian deputy prime minister, said at a news conference: "We must hope that at next year's Pentagonal Group meeting in Dubrovnik not only the ideas about which we are so enthusiastic today, but also their specific results, will be discussed."

#### **Czech Environment Minister Opposes Nuclear Power**

*AU0108083190 Prague MLADA FRONTA in Czech  
25 Jul 90 p 3*

[Interview with Bedrich Moldan, Czech Republic minister of the environment by MLADA FRONTA correspondent Josef Tucek; place and date not given: "Bet on an Alternate Path"—first two paragraphs are MLADA FRONTA introduction]

[Text] In case of a major breakdown at the Czechoslovak nuclear power plant in Temelin, Vienna and Linz would

have to be evacuated immediately. Marchfeld, the granary of eastern Austria, as well as the fruit-growing area of Wachau would be contaminated by radioactivity for millennia, and on moonless nights now phosphorescent fish would swim in the Danube. That is the apocalyptic vision published in the Austrian newspaper KURIER. This daily brought the issue to a head, but the reason for its attitude is rooted in Austria's negative stance on Czechoslovak nuclear power production. In a national referendum, the Austrians rejected their own nuclear power project years ago. Therefore, they are even more uneasy about the situation in Czechoslovakia and, as a result, they cry out against our nuclear power plants. The Chernobyl disaster demonstrated to them clearly that radioactive clouds resulting from meltdowns do not respect state borders.

The Czechoslovak power industry's forward planning, however, includes the use of nuclear power for the future. And what does Bedrich Moldan, minister of the environment of the Czech Republic, say to that?

[Tucek] The defenders of nuclear power projects in Czechoslovakia often claim that we have no other alternative but to count on nuclear power. What is your comment?

[Moldan] I would not be so blunt as to say that. At present, approximately one-fifth of all our electric power is already produced in nuclear power plants. Therefore, from an economic standpoint I believe it is impossible to give up nuclear power now. In my opinion, however, we should not build any more nuclear power plants. I believe that it would suffice to only bring into production the units under construction at Temelin and Mochovce and use them for some twenty, twenty-five years, but no longer. That would provide us with the time to develop some alternative sources.

[Tucek] What alternative sources do you have in mind?

[Moldan] Among the alternative sources, I am thinking of are fossil fuels, particularly [natural] gas, of which there is sufficient quantity in Europe. Of course, it is not necessary to tie oneself to the Soviet Union for its purchase. It is not a political but an economic question, because very soon we will be paying world prices in dollars to the Soviet Union, just as we do to everyone else. It will be necessary to find, in accordance with market principles, the most expedient supplier for reciprocal supplies and the like. I believe that this is acceptable on a temporary basis. The real alternative sources are not sufficiently developed because their development has not been funded as well as it should have been. In comparison with the investments in the nuclear research (which, by the way, no one can figure out because the numbers are classified and cannot be separated from the military research), the amount of money spent, for instance, on the development of solar collectors is only a minute fraction. For the future, I personally believe in solar energy. Moreover, the research in this field progresses very fast.



[Tucek] The advocates of nuclear power often employ the credo if Temelin is not completed, northern Bohemia will continue to die. How would you respond to that?

[Moldan] It is necessary to realize that Temelin will not be completed immediately. The first stage will only have a 200-megawatt capacity, and that certainly does not solve the entire Czechoslovak power problem. You know, if I had today the 40 billion [korunas] planned for Temelin—and everybody knows that it will cost more—then I would try to much more effectively help northern Bohemia. I would immediately purchase the desulphurizing equipment from the West Germans. I would assign Vitkovice the task of building better mining machines so that the worst quality coal would not have to be mined. I would spend at least one-third of that sum for energy-saving programs so we do not have to produce so much of it. Meanwhile, the north Bohemian smokestacks will have to work that much more for Temelin because construction will take lots of energy.... By the way, I am convinced that the fundamental argument against nuclear power—the economic one—has not yet been fully understood. Do not forget that the investment in nuclear power is not just the actual cost of building the plant and the production costs, but the cost of the plant's eventual removal and the long-term storage of the burnt fuel as well. Nuclear engineers assure us that there is no problem that cannot be dealt with on a technical basis. In other words, that they are completely capable of building safe nuclear power plants. Fine, but at what cost? If one must invest more than is reasonable, then the whole thing does not make sense. Take the example of the United States. After the breakdown at the Three Mile Island nuclear power plant, no new plant has been ordered for that location. The necessary safety equipment is so expensive that it would not pay for any power company to get involved.

[Tucek] By depending on solar power, for instance, do we not take the risk, that one day we will sit in the dark under extinguished light bulbs?

[Moldan] Many countries, for instance, Austria among our neighbors, have chosen the nonnuclear way. Sweden has also decided that it will only keep existing nuclear plants and those only for the term of their normal productive life. These countries do not possess many more exploitable resources than we do. But they believe that they will manage to find alternatives—safer and also more expedient than nuclear power. For us, at this time, I am convinced that the question of resources is not the most important one. First of all, we must determine how much energy we actually need. After all, in comparison with production in the developed countries, the expense of power is one-and-a-half to two times higher in Czechoslovakia.

[Tucek] The Czechoslovak power-production concept so far does not foresee a marked decrease in energy consumption, and it does not expect any limitation in nuclear power plant construction either. So who will decide on our nuclear or nonnuclear future?

[Moldan] This decision will have an impact even on the lives of the coming generations. After all, the highly radioactive waste reaches a half-life of many thousand years. And, in time, such waste will probably be stored also in our country. In my opinion, neither a body of experts nor a government can decide on something as serious as this. The decision must be made by people. Since the possibility of holding a referendum does not exist in Czechoslovakia, I am convinced that this problem must be submitted to the parliament. However, I would not want the deputies to make decisions for purely emotional reasons. Before it is time to make a decision, they should become acquainted with all the implications of nuclear power.

[Tucek] That will not be simple; one has not been allowed to know anything about the subject for a long time.

[Moldan] True, information was suppressed and distorted in Czechoslovakia for 40 years. In the West, discussion on the subject has lasted for 40 years. It has not even opened yet in the deeper sense of the word in Czechoslovakia; so far there is nothing to be discussed—there are no research reports, only some unilateral propagandistic material either supporting or opposing the nuclear power. It is necessary to finally have a real debate, a confrontation of opinions, so people will eventually be able to make a decision based on objective information and comprehensive analyses.

#### **Calfa on Need for Expansion of Nuclear Program**

*AU0908162790 Vienna KURIER in German  
9 Aug 90 p 5*

[Interview with Premier Marian Calfa by Jana Patsch; place and date not given: "We Continue To Push Ahead Nuclear Power"]

[Text] [Patsch] What will happen if the experts' opinion on the Bohunice nuclear plant is negative?

[Calfa] If the majority of the experts decide against Bohunice, we will close it down. Or do the Austrians really believe that the CSFR Government is so irresponsible that it would endanger its own population? The patronizing behavior across the border seems to me to be a misjudgment of the qualities of the CSFR leadership. I repeat: If I get a signal that Bohunice is dangerous, we will close it down in our own best interest.

[Patsch] So far you have not received such signals?

[Calfa] No! Our nuclear experts have repeatedly assured me that the two units are safer than they were in 1977, when they were put into operation. For 13 years we have steadily added equipment. Now I tell you something else: How would the Austrians react if a CSFR minister suddenly turned up at an enterprise with journalists and television cameras and claimed that this company is a danger to the CSFR?

[Patsch] Had Environment Minister Marilies Flemming not been invited?

[Calfa] As far as I know she invited herself. However, I discussed everything with Chancellor Vranitzky in a sensible manner, and he understands our problems.

[Patsch] Has the chancellor offered you help?

[Calfa] Mr. Vranitzky has offered us the delivery of electricity for any potential shortfalls during the examination of the reactor....

[Patsch] Deliveries for free?

[Calfa] Allegedly, yes. However, just on the side, it is technically impossible to transport the electricity that Austria has offered to the CSFR because of different voltage and nonexistent lines. I am not sure whether the Austrian engineers did not perhaps know this before the offer was made.

[Patsch] Have you not also been offered energy-saving technology?

[Calfa] This would be very welcome. We had hardly expressed interest and asked how this technology could be financed, when we received the answer: We would be given loans with conditions in accordance with standard banking practices—conditions that we could obtain anywhere in the world; this is not a special contribution from Austria.

[Patsch] Thus, the energy-saving measures are again receding into the background?

[Calfa] At the moment, 65 percent of our energy comes from brown coal. What this means for the environment can be seen by everyone in northern Bohemia. I am seriously thinking of inviting all critics of our energy policy to stay in such a region. Therefore, we continue to push ahead in nuclear energy—to be able to close down the thermal power plants. As sorry as I am, in the future we will not be able to afford any electricity exports anymore. This will also affect Austria.

[Patsch] The reduction of oil deliveries from the USSR has put an additional strain on your existing problems with energy....

[Calfa] Quite right. Although we can activate the Adriatic pipeline, we do not have any foreign currency to buy crude oil on the world market. We can pay only with machines or industrial products. We made down payments in this way in Iraq; now we have the boycott ruled by the UN Security Council. We want to, and we will, join this boycott, but it hurts us very much in economic terms.

#### Government To Continue Nuclear Plant Operation

LD2607165990 Prague CTK in English 1627 GMT  
26 Jul 90

[Text] Prague July 26 (CTK)—The Czechoslovak Government decided at its session today that the V-1 nuclear power plant in Jaslovské Bohunice, West Slovakia, will continue operation at least until three expertises [as received] have been carried out, i.e., by the end of November 1990.

The information was given by government spokesman Zbynek Fiala at a press conference today. The Austrian Government has demanded an immediate shutdown of the plant.

The Czechoslovak Government met an Austrian request that representatives of the Austrian Government participate in expertises that will be started by the West German company Siemens on August 7, or form its own group of experts. Siemens has equipped the power station with diagnostics equipment that is to increase safety.

In addition to expertises to be carried out by Siemens and the International Atomic Energy Agency (IAEA), the European Community will send its commission to Jaslovské Bohunice. The Czechoslovak Government believes that the three expertises will ensure an independent view on the problem of safety and shutdown of the nuclear power station if necessary.

The government asked Ministers Josef Vavroušek and Vladimír Dlouhý to form a Czechoslovak commission for a comprehensive assessment of the condition of the V-1 nuclear power plant in Jaslovské Bohunice.

The Czechoslovak Government issued a statement on the V-1 nuclear power plant in Jaslovské Bohunice that says that it reacts to reports in Czechoslovak and foreign, especially Austrian, media concerning operation of the Bohunice plant, and primarily an interview given by Jiri Beránek, former chief nuclear safety inspector of the Czechoslovak Atomic Energy Commission, to the Slovak paper NOVE SLOVO on 14 June 1990. Besides details about the power plant's safety standards, the information contained a warning against its continued operation. "The government declares that it is fully aware of its responsibility to its own citizens and neighboring states. At the same time, it does not regard some statements on the Austrian part as proper with regard to the principles of friendly relations between neighboring states".

The government noted that the structure, location, and safety system of the plant "are not up to the present world standards. However, despite preliminary findings that the condition of the V-1 plant is not fully satisfactory, it is not necessary to stop its operation."

The government noted that about 35 similar reactors are in operation in East and West at present. The V-1 plant in Jaslovské Bohunice is the last, i.e., the youngest power

station of this type built in the Council for Mutual Economic Assistance member states, and its operating reliability is still of a world standard. A program of increasing the safety and operating reliability of the plant was worked out in 1986 and has been gradually implemented.

Operation is currently regulated by the principles of a special regime approved and monitored by the state inspection for nuclear safety of the Czechoslovak Atomic Energy Commission. The plant uses diagnostic equipment supplied by Siemens-KWU, and its condition is assessed in detail at regular working sessions of the operating body and the state inspection, the government statement said.

#### **Commission's First Session on V-1 Nuclear Plant**

*LD3107200490 Prague CTK in English 1902 GMT  
31 Jul 90*

[Text] Prague July 31 (CTK)—The Czechoslovak commission for a comprehensive assessment of the safety of the V-1 nuclear power plant at Jaslovské Bohunice, West Slovakia, held its first session here today.

Taking part were 15 top experts on various nuclear safety-related spheres, appearing as specialists with personal responsibility, not as representatives of their institutions.

The commission decided to set up six working groups on assessment of the overall concept of the V-1 type nuclear power plant, its resistance to potential seismic activity, condition of the reactor vessel and the primary circuit, condition of other technical equipment of the plant, condition of the measurement, regulation and control equipment, ability of the staff to react to common and extraordinary events, assessment of the plant's systems and measures to minimize the negative consequences of a possible accident.

Preliminary results of the commission's work will be published by the end of August and the results of the second stage by the end of this year when a proposal on the further course of action will be made.

The commission was set up on the basis of a resolution adopted by the Czechoslovak Government on July 26 when it discussed the future of the Jaslovské Bohunice plant, giving the green light to its further operation at least until three expertises have been carried out, i.e. by the end of next November.

The expertises will be conducted by the West German company Siemens, the International Atomic Energy Agency (IAEA) and the European Community.

The expertises have been prompted by Austria's demand for an immediate shutdown of the plant.

In its statement of July 26, the Czechoslovak government said that "despite preliminary findings that the condition of the V-1 plant is not fully satisfactory, it is

not necessary to stop its operation", and recalled that the operation is regulated by the principles of a special regime approved and monitored by the state inspection for nuclear safety of the Czechoslovak Atomic Energy Commission.

#### **Vavrousek on Vienna Talks on Nuclear Plant**

*LD3107201290 Prague CTK in English 1910 GMT  
31 Jul 90*

[Text] Prague July 31 (CTK)—The Czechoslovak side assured Austrian partners that great attention has been devoted to ensuring safety of Czechoslovak nuclear power plants and thus also of the country's and all neighbouring states' population, Minister-Chairman of the Czechoslovak Committee for the Environment Josef Vavrousek told CTK here today.

Speaking about the talks of Czechoslovak and Austrian representatives in Vienna on July 30, 1990 about safety of both units of the V-1 nuclear power plant in Jaslovské Bohunice, West Slovakia, he stressed that the Czechoslovak and Austrian representatives confirmed their interest in deepening good-neighbour relations, adding that a number of concrete technical and organizational measures have been taken in the past years to ensure nuclear power safety.

Czechoslovak representatives stressed at the talks that the decision on whether the operation of the V-1 units will continue, be reduced or suspended will be taken by the Czechoslovak Government on the basis of the stand of state inspection of the Czechoslovak Atomic Energy Commission. It will strictly respect objective and scientific viewpoints, Josef Vavrousek said, adding that the two sides' representatives agreed upon participation of experts nominated by the Austrian Government in the planned expertises.

Czechoslovak representatives briefed their Austrian partners on a long-term program of the International Atomic Energy Agency concerning the safety of older nuclear power plant units. The first discussions on its contents and organizations will be held on September 10, 1990.

The Austrian side accepted all information with satisfaction and appreciated the openness of Czechoslovakia in the solution of these issues, he stressed.

#### **Agreement Reached on Inspection of Bohunice Plant**

*AU0108105390 Vienna DER STANDARD in German  
1 Aug 90 p 1*

[Text] Venice—On Tuesday evening [31 July] Austria's demands to the Czechoslovak Government regarding the Bohunice nuclear power plant were finally accepted: On the sidelines of the Pentagonal summit in Venice, Czechoslovak head of government Marian Čalfa promised Chancellor Franz Vranitzky that a group of Austrian



experts will be permitted to participate, "with equal rights," in inspecting the Czechoslovak nuclear power plant.

As Vranitzky stated after his talk with Calta, which lasted for about one hour, the Austrian experts will have an equal say in the examining commission. Austria's Bohunice experts' commission, which is to consist of five to 10 members, will begin its work as early as 10 August.

#### **Nuclear Power Plant Safety Said Improved**

LD3107091890 Prague CTK in English 0840 GMT  
31 Jul 90

[Text] Prague July 31 (CTK)—The "Kralovopolske Strojirny" engineering works in Brno, south Moravia, has developed a new-generation heat exchanger for nuclear power stations, which—apart from increased efficiency and durability—also is safer.

"Kralovopolske Strojirny Brno" (KSB) will produce the new-generation heat exchangers for the first bloc of the nuclear power plant at "Temelin" (south Bohemia). Also, the exchangers now operating at the "Dukovany" (south Moravia) nuclear power plant will be replaced, as part of the plant's modernization.

"KSB" was prepared to supply also the "Mochovce" nuclear power station in west Slovakia (construction launched 1984) with its modernized heat exchangers, but this offer was rejected by both the Czechoslovak and "CMEA" authorities, which feared "increased cost".

### **GERMAN DEMOCRATIC REPUBLIC**

#### **Effects of Uranium Mining To Be Investigated**

LD2307161790 East Berlin ADN International Service  
in German 1425 GMT 23 Jul 90

[Excerpt] Berlin (ADN)—The effects of uranium mining in southern GDR on the population and environment are at present being investigated. Main supporter of this research program is the State Office for Nuclear Safety and Radiation Protection (SAAS), its vice president, Professor Dr. Walter Roehnsch, said at a press briefing today. Other partners are the SDAG Wismut, the FRG Office for Radiation Protection, and foreign institutions.

The investigations will not be confined to radiation effects. They also comprise medical investigations among the population affected, and a comprehensive survey of the quality of the air and groundwater. First results should be available at the end of this year. [passage omitted]

### **HUNGARY**

#### **Nuclear Plant Expansion Halt Announced**

AU0208192290 Vienna KURIER in German  
2 Aug 90 p 2

[Report by N. Glattauer and K.M. Mayer: "Hungary Stops Expansion of Nuclear Power Plants!"]

[Excerpt] Sensational change of neighboring Hungary's nuclear policy! As new Environment Minister Sandor Keresztes told [Vienna] KURIER on Tuesday [31 July], Hungary has decided to stop the expansion of nuclear power plants for the time being. Existing plans for two new reactors—which were planned to be operated by France—will be put on hold until 1996. Thus, only the nuclear power plant in Paks, in the southern part of the country, remains in operation in Hungary. Its four reactors of the WWR 440, V213 type are a slightly improved version of the Bohunice type V230.

Minister Keresztes, who is paying a brief visit to Vienna, told KURIER: "Hungary understands Austria's concern about the Bohunice nuclear plant in particular and about the use of nuclear energy in general. We, too, are afraid, because we know that nuclear power is unsafe and that its dangers cannot be predicted." Therefore, the government in Budapest has decided to work out alternative energies; help from Austria is indispensable for this. In particular, the consistent exchange of research results is necessary.

Austrian Environment Minister Flemming, who visited the disputed Slovene nuclear power plant in Krsko on Wednesday [1 August], commented on Hungary's attitude before her departure: "This is a great, pleasant surprise for me." She will now urge the establishment of a special energy commission, consisting of Hungarians, Czechoslovaks, and Austrians. She would be able to allocate 7 million schillings from her budget to this. Said Flemming: "Together we are strongly against the nuclear lobby." [passage omitted]

### **POLAND**

#### **KERM Deliberates on Energy Industry**

LD2407215990 Warsaw Domestic Service in Polish  
1700 GMT 24 Jul 90

[Text] The Council of Ministers Economic Committee [KERM], deliberating in Warsaw, is considering the development of the energy and fuel industry in Poland. The report presented by the Ministry of Industry contains both a diagnosis of the current situation and prognoses for the fuel and energy balance, as well as proposals for certain strategic solutions relating to the structure of energy sources in Poland and also the question of making our country independent in energy. Industry Minister Tadeusz Syryjczyk, presenting this document, said that in current conditions he regards the development of nuclear energy in Poland as unprofitable.

at least until the year 2000. He also stated that decisions on the matter of the Zarnowiec power station should be made after the holidays at the latest.

## ROMANIA

### Roman Meets Canadian Delegation on Atomic Issues

AU1707194690 Bucharest ROMPRES in English  
1724 GMT 17 Jul 90

[Text] Bucharest, 17 Jul (ROMPRES)—Talks got under way in Bucharest between Romanian officials and Canadian businessmen on the completion of construction works on the nuclear power plant at Cernavoda and on an offer concerning the construction of a new similar plant through an open competition to be entered also by Romanian units that have already worked according to the Candu project.

A delegation led by Don Lawson, president of the Atomic Energy Canada Ltd. Candu operations, conducted detailed talks with the minister of state in charge of industrial and commercial activities, Anton Vatasescu, assisted by other Romanian dignitaries and experts.

On Tuesday [17 July], Don Lawson was received by Romania's Premier Petre Roman. Pointing out that the interview had been positive, the Canadian guest said he was impressed by Romania's determination to assume greater responsibility in building that plant and highlighted the willingness of the Canadian side to cooperate with various Romanian enterprises, where very able experts work. Don Lawson did not specify the date for the commissioning of the plant as that depends on several factors, such as the agreements to be reached, but he said that Romanian-Canadian cooperation would be close at least for the following four years.

### Canadian Company Denies Reports on Cernavoda

AU0308160990 Bucharest ROMPRES in English  
1501 GMT 3 Aug 90

[Text] Bucharest ROMPRES 03/8/1990—Mr. Mac Kellor, director in charge of relations with the press of "AECL Candu Ltd." of Toronto denied news items in the Canadian press about the so-called atrocities occurred on the site of the Candu reactor in Romania.

After a visit to Romania, Mr. Mac Kellor published an article in the Canadian newspaper THE GLOBE AND MAIL denying the calumnies about the site of the nuclear power plant of Cernavoda showing inter alia that the working and living conditions on that Candu reactor site were difficult but that "they are far from being inhuman." The author of the article specifies that the project was the aim of attacks by a group of Hungarian nationalists gathered in the Hungarian Foundation for Human Rights.

Mr. Kellor writes that he saw dwellings about which it was said to be subhuman but which resisted the recent earthquakes in Romania, that they were inferior to the Canadians' dwellings but not miserable.

### Nuclear Power Plant Deal With Spain Denied

AU2607181890 Bucharest Domestic Service  
in Romanian 1700 GMT 26 Jul 90

[Text] In connection with the information disseminated by VOA in its broadcast of 24 July at 2000 this year, which cited extensive excerpts from the WEST BERLINER TAGESZEITUNG regarding a hypothetical acquisition by Romania of a Spanish nuclear power plant already built in the Basque Provinces, the president of the National Commission for the Control of Nuclear Activity, Mr. Stefan Alexandru Olariu, stated the following to our radio station:

Romania is cooperating in the use of nuclear energy with the Vienna-based International Atomic Energy Agency and in the field of building the Cernavoda nuclear power plant only with Canada, Italy, and the United States.

In view of this situation, it is clear that the information taken over by VOA from the daily WEST BERLINER TAGESZEITUNG lacks any basis because it is based on unverified assumptions.

Romania does not intend to acquire any nuclear power station from Spain. Certainly, the Romanian side is open to any form of technical, scientific, and commercial expertise on this subject and is ready to exchange information with the Spanish side within the strict framework of international regulations and commitments in this area, but no accord exists between Romanian and Spanish companies in connection with acquiring a nuclear power plant built in Spain.

At the same time, we want to express our surprise at the superficial way in which some publications and radio stations disseminate information at variance with the truth and intended to harm the interests of Romania, the president of the National Commission for the Control of Nuclear Activity, Mr. Stefan Alexandru Olariu, stated to our radio station.

### Romania Reportedly To Export Nuclear Equipment

AU0308141090 Bucharest ROMPRES in English  
1306 GMT 3 Aug 90

[Text] Bucharest ROMPRES 3/8/1990—Romania will join the group of nuclear material, equipment and technology exporters, Ambassador Traian Chelebeu, the new spokesman for the Ministry of Foreign Affairs told Thursday, August 2, Romanian and foreign journalists.

The spokesman also specified that the decision taken in Bucharest, and notified to the director-general of the

International Atomic Energy Agency and to the members of the Club of London is part of the openness policy promoted by the Romanian Government after the December revolution.

### YUGOSLAVIA

#### **Austrian Minister Discusses Krsko Nuclear Plant**

*LD0108174490 Belgrade TANJUG in English  
1612 GMT 1 Aug 90*

[Text] Krsko, 1 Aug (TANJUG)—The Yugoslav power plant Krsko is continuing to cause major fear in the Austrian public, frightened by the effects of the Chernobyl disaster, Marilies Flemming, Austrian minister of the environment, told a press conference in the small Yugoslav town Krsko on the border between the Republic of Slovenia and Croatia.

The Austrian minister reiterated a stand of Austria's public and political top requesting the earliest possible

closing down of Krsko, Yugoslavia's only nuclear power plant. She also asked that access be provided to all information on the plant's operation.

Slovenian Deputy Prime Minister Leo Seserko agreed to this stand and added that there were no reasons for keeping secret the information about the plant's work.

The 664-management plant was built in 1981.

The Slovenian Government made public a plan envisaging Krsko's closing by 1995. The Slovenians should give their opinions on this matter at a referendum by the end of the year.

However, the plant's other owner, the Croatian Government, recently rejected the idea on closing down the plant as it cannot provide an alternative source of energy for 17 percent of this republic's production of electricity, which have so far been produced by Krsko. The Croatian Government maintains that the plant is operating safely.

## ARGENTINA

### CNEA Chairman Discusses Privatization Rumors

PY2107035590 Buenos Aires TELAM in Spanish  
1955 GMT 20 Jul 90

[Text] Buenos Aires, 20 Jul (TELAM)—Manuel Mondino, chairman of the National Atomic Energy Commission [CNEA], has admitted that the CNEA has prepared a plan—to soon be submitted to President Carlos Menem—for the creation of a "mixed association for nuclear plant operations." He expressed surprise over rumors that these plants will be turned over to private hands.

"Our plans are well known at the Energy Under Secretariat," Mondino said. He noted that he is facing a "struggle of interests" as in December 1989, when the CNEA was previously ordered transferred from presidential jurisdiction to the secretariat, which was led at that time by Julio Cesar Araoz. This decision was finally overruled by the president.

In remarks to the press, Mondino said that the shutdown of Atucha-1 "was not caused by a plant failure" but by a problem in a "discharger" in the national network system (SIC) that caused peak tension on the line, and "all the safety mechanisms reacted" to shut down the reactor.

He said that in these cases the "nuclear poison" remains within the atomic reactor, preventing a reaction. A total cleanup of the reactor is necessary, and this will take some 40 hours. He said that if the reactor did not suffer any damage, Atucha-1 will probably resume operations between tonight and tomorrow morning.

The CNEA president said the rumor that this shutdown was caused by the same damage that affected the plant in 1987 was an "offense to scientists," pointing out that repair work concluded in January 1990. Atucha-1 resumed operations at full capacity (362 megawatts) last week.

Regarding the possible privatization of the two operating nuclear plants (Atucha-1 and Embalse) and the one under construction (Atucha-2), Mondino said that "for security reasons the CNEA's presence is necessary." He added that the proposed mixed association anticipates the participation of the CNEA, not as a major shareholder but with control over security, technological services, and the transfer of "know-how" [preceding two words in English].

Mondino said that Argentina is increasing its participation in construction of the country's nuclear plants, with 11-percent participation in Atucha-1, 33 percent in Embalse, and 60 percent in Atucha-2, while "in terms of thermal power plants we are still a technologically dependent country."

Mondino pointed out that "the energy sector is in a disastrous state" because "out of every four thermal

kilowatts, three are wasted." He explained that thermal power plants have an installed capacity of 6,351 megawatts, but that up to now 4,875 megawatts are not available, representing 76.76 percent. In terms of hydroelectricity, 941 megawatts out of a total of 5,771 are unavailable (16.31 percent); in the nuclear sector, 18 megawatts out of a total of 1,026 are not available (1.75 percent).

Regarding the completion of current projects (Atucha-2, the Neuquen heavy water industrial plant, and the Pilcaniyeu uranium enrichment plant), Mondino said that a "timetable for the use of foreign credit" was agreed upon two days ago with Finance Secretary Saul Bouer, and "we were told to continue as far as possible," he said.

He also noted that Allotment 42 (for projects) "has been reduced by 244 billion australes (repeat, australes)" in the 1990 budget, which for the CNEA amounts to approximately \$320 million, "with a minimum contribution of \$50 million in treasury bonds, to be paid in five years." I believe that with these resources, which include the "pari pasu" German credit, the remainder of another private German credit, and a Spanish contribution, we will be able to advance 10 percent "between now and March," Mondino said.

According to Mario Rapisardi, CNEA's manager of administration and finance, the heavy water plant will get 63.7 million [currency not specified] (10 million from the Treasury and the rest in bonds, bonex [export bonds], existing credits, and other specific resources), which will allow the project, which is almost finished, to advance at least three or four percent, and to perhaps begin operating "by the end of 1991," he said.

### Report on Nuclear Projects, Privatization Plan

PY0808170990 Buenos Aires CLARIN (economic supplement) in Spanish 5 Aug 90 p 8

[Report by Ismael Bermudez]

[Text] With the imminent resumption of construction at the Atucha-2 nuclear power plant, the Heavy Water Industrial Plant, and the Pilcaniyeu uranium plant complex, there are hopes that the nuclear plan will free itself from its current bogged-down situation. Other projects, on the other hand, will suffer another three- to five-year delay. To the high cost of the frozen projects, one must add the obsolescence of the equipment and the expiration of their guarantees. There is a CNEA [National Atomic Energy Commission] initiative to operate and exploit nuclear power plants using private capital.

Construction at the Heavy Water Industrial Plant (PIAP) will be resumed within 20 days, the Atucha-2 project will be resumed within 40 days, and the expansion of the Pilcaniyeu complex will be resumed over the next few days.



Talking to CLARIN, [CNEA Chairman] Manuel Mondino announced that the CNEA has reached agreement with the Economy Ministry on the contributions for resuming these projects that have been delayed for a long time.

The CNEA chairman said that the construction of Atucha-2 by ENACE [Argentine Nuclear Enterprise for Electrical Power Plants], a CNEA-Siemens joint venture, began in 1981. Sixty-five percent of the project has been completed and there are now plans to complete another 10 percent by March 1991, he said. To this end, the appropriate funds have been released through a Finance Ministry contribution, CNEA bonds, and a Spanish loan of about \$150 million that will be doubled when a German loan for the same amount becomes effective. With these funds, Mondino added, we will be able to resume the civil construction works and also the installation of 17,000 tons of components that are being kept in store.

The objective is to have Atucha-2 operational in 1995, eight years after its originally scheduled date.

Regarding the PIAP, which is located in Arroyito (Neuquen Province), 94 percent of the project has been completed and \$136 million is required to complete it. It is now scheduled to become operational in 1992, although it was originally scheduled to begin operations on 15 December 1983. This is a priority project, Mondino said, because it will supply the heavy water required for Atucha-2, return the heavy water leased for the Embalse nuclear power plant, and accumulate a reserve stock [preceding word in English].

The expansion of the uranium enrichment plant that the CNEA is building at the Pilcaniyeu plant complex, 60 km from Bariloche, requires about \$30 million, and it is scheduled for completion next year. According to the CNEA chairman, the operation of this plant will permit savings of up to \$200 million in slightly enriched nuclear fuel for the three nuclear power plants in operation and under construction and meet export obligations.

We are concentrating our funds into completing these three half-finished construction projects because an extremely high cost is involved in keeping them at a standstill, Mondino concluded.

#### **Power Peak Disables Atucha-1 Nuclear Plant**

*PY2607150890 Buenos Aires TELAM in Spanish  
0119 GMT 20 Jul 90*

[Text] Buenos Aires, 19 Jul (TELAM)—National Atomic Energy Commission [CNEA] sources reported tonight that the Atucha 1 nuclear plant went out of action this morning due to "a high tension peak on the line" of the national interconnected service.

The spokesmen indicated that the failure was due to "causes that have nothing to do with the plant," and that

the failure was caused by "problems in SEGBA's [Greater Buenos Aires Electrical Services] generation of electricity."

The nuclear plant, which began to operate at 100-percent capacity (345,000 kw) last week, experienced the high tension peak in the conventional (nonnuclear) part of its installations.

The sources stated that the consequences of this problem will have to be evaluated and that the nuclear plant will be out of operation for two to three days.

#### **Nuclear Plant Resumes Operation After Repair**

*PY2407021290 Buenos Aires TELAM in Spanish  
2020 GMT 23 Jul 90*

[Text] Buenos Aires, 23 Jul (TELAM)—The National Nuclear Energy Commission (CNEA) today reported that the Atucha-1 nuclear plant was connected to the national interconnected network (SIN) at 2057 [2357 GMT] on 21 July, and that it began operating "at 100 percent of its capacity" at 1957 yesterday.

A communique said that Atucha-1 discontinued its operations at 0711 on 19 July because of an "external disturbance on the 220-KV [as received] line," for which reason the central shutdown "following the automatic operation of the security mechanisms."

The communique added that the malfunction was repaired by "specialized CNEA personnel" who worked for some 60 hours, "during which period measurements and inspections were performed on the main transformer and on the other facilities."

The communique concluded by saying that yesterday Atucha-1 returned to operation at full power "as it had been doing since 11 July 1990, supplying 367,000 kilowatts to the national network."

#### **Congressmen Concerned Over Ezeiza Nuclear Plant**

*90WPC127A Buenos Aires LA PRENSA in Spanish  
30 Jun 90 p 5*

[Text] A group of national deputies have introduced a draft resolution asking the Executive Branch for reports on the features and functions of a laboratory for radiochemical processes now under construction at the Ezeiza Atomic Center.

The petition is signed by Deputies Hector Dalmau, Oscar Blanco, Victor Sodero Nievas, and Raul Rodriguez, among others, whose concerns include the annual plutonium production capacity and the use to which the substance produced at the planned Ezeiza Atomic Center laboratory will be put.

#### **Welfare of the People**

In addition, "in order to protect the welfare of the people and preserve the human environment," lawmakers

wonder about the safety of a nuclear material reprocessing plant and want the Executive Branch to report to them regarding: current progress on the construction and setting up of the laboratory, the investment to date as well as the total estimated investment, and the scheduled startup date.

They also want to know whether safety criteria meet international standards accepted by the International Committee on Radiological Protection and, along these same lines, what procedures will guarantee plant safety.

#### Other Questions

In addition, they wonder whether provisions are being made to ensure the supply of electric power to air and ventilation systems in the case of outages at SEGBA [Greater Buenos Aires Electrical Services], what will be done with solid waste, and whether radioactive waste will be released into the atmosphere. If so, they want to know the types and amounts.

Since the laboratory which will operate in the vicinity of the Aguirre Stream, which belongs to the Matanza Basin, is in a flood zone, "and since the laboratory floor will probably be at a level of approximately eight meters," they want to know what provisions are being made for environmental contamination due to flooding.

They want to know what precautions to take in the event of a likely explosion followed by fire due to a gas leak and, given the proximity of the Neuba II gas pipeline, what will be done to handle an accident involving the loss of concentrated liquid waste, what types of meters have been provided for environmental monitoring, and whether provision has been made for a possible terrorist attack during the transport of radioactive material from Atucha to Ezeiza and from there to the final disposal, as well as safety standards adopted for such transport.

Finally, the lawmakers want to know what provisions have been made in the design of barriers, dynamic as well as structural and selective, "inasmuch as, due to the location of the laboratory, a serious air accident involving fire and explosions can be deemed likely."

#### Train With Radioactive Material Derails

PY1907185890 Buenos Aires Domestic Service  
in Spanish 1600 GMT 19 Jul 90

[Relay from Santa Fe by Juan Domingo Demonte]

[Text] An unusual accident has occurred here, which has caught our immediate attention largely due to the effect it could have on health because radioactive material is involved.

According to information we gathered this morning and to a charge made by a radio listener, some cars of a train derailed near the northern town of San Justo, Santa Fe Province, specifically near the town of Rincon del Quebracho beyond the Salado River. The train was made up

of 27 cars—20 of the cars were loaded with soybean and the rest carried radioactive material.

According to investigations conducted by our information service, the train came from Bolivia and was heading for the Buenos Aires city of Ensenada. The San Justo police have confirmed the report released by Radio Nacional from Santa Fe, and have said that the case was placed under the jurisdiction of the Santa Fe Federal Court. This morning we tried to communicate with Judge (La Fontana), who will hear the case, because the federal judge had no information. We also tried unsuccessfully to communicate with the traffic superintendent for Belgrano Railway, which was involved in the accident.

There is fear that the radioactive material has spread in the area of the accident, taking into account that police are guarding the sector. The police probably do not have the appropriate equipment for the situation.

[Begin recording] [First reporter] Do you have specific information on the type of radioactive material carried by the seven cars?

[Second reporter] The police could not give any information on the type of material.

[First reporter] It might be uranium, taking into account the fact that the train came from Bolivia. What is also important is the fact that the material could have contaminated the soybeans. There must have been several hundred tons of soybeans considering that the train had 20 cars loaded with it.

[Second reporter] We have learned that this material has been transported on other occasions and that there was another accident near the town of Sauce Viejo, near Santa Fe Province. The field where the accident occurred was completely destroyed.

[First reporter] Can you tell us if the accident occurred very close to the northern town of San Justo, or in an isolated area?

[Second reporter] It occurred in an isolated area, not far from the city of San Justo.

[First reporter] We will try to contact the National Atomic Energy Commission to learn about what type of radioactive material was involved and what possible danger it might pose to people and food. [end recording]

#### BRAZIL

#### CTA Said To Help Iraq Obtain Atomic Bomb

##### Supercomputer Sale

PY0108020290 Rio de Janeiro O GLOBO in Portuguese  
31 Jul 90 p 15

[Excerpt] In an article published in the 29 July issue of THE NEW YORK TIMES, Garry Milholin, director of

the Nuclear Arms Control Project, and David Dantzic, both U.S. nuclear experts, criticized the sale of an IBM supercomputer to Embraer [Brazilian Aeronautics Company]. They assert that the equipment will be used by the Aerospace Technological Center (CTA) to help Iraq obtain an atomic bomb.

The article contains serious accusations against CTA, including the fact that the center provides Iraq with technology on rocket aerodynamics, flight tests, and rocket guidance controls. Milholin and Dantzic term this aid as outrageous in view of the recent threats made by Iraqi President Saddam Hussein against Israel and Kuwait. [passage omitted]

#### Government Refutes Report

PY0108022490 Rio de Janeiro O GLOBO in Portuguese 31 Jul 90 p 15

[Text] Brasilia—Commenting on THE NEW YORK TIMES article, Itamaraty spokesman Jose Vicente Pimentel stated yesterday that "the Brazilian Government is a responsible organization, and it refutes accusations based on obsolete reports." He added that there is growing confidence in current Brazilian-U.S. relations.

Pimentel said that the Brazilian Government has not received any complaints in contacts with U.S. officials and that Brazil is equally concerned about the use of sensitive technology. Pimentel also recalled repeated statements by Brazilian officials that Brazil does not intend to manufacture an atomic bomb, especially because the Constitution forbids it.

According to Pimentel, the purchase of the supercomputer complies with the provisions of U.S. laws and of Coccon [expansion unknown], the enterprise that regulates the export of products with a dual purpose to East European countries, and the purchaser, Embraer [Brazilian Aeronautics Company], respects them.

The Itamaraty spokesman said it is not the first time that the international press has published accusations of this nature. A government source noted the existence of interests that generate accusations against Brazil and other countries (Argentina among them), which can be related to several things, such as competition between enterprises or the idea of preventing certain countries from acquiring technological independence.

Science and Technology Secretary Jose Goldemberg has interpreted these accusations as "another way of pressuring Brazil to sign the Nuclear Nonproliferation Treaty."

In addition to making at least three factual errors, THE NEW YORK TIMES article shows a tremendous imperialist trend. One of the errors refers to the CTA [Aerospace Technology Center], which does not produce centrifuges or enrich uranium. Another error is the accusation that the Brazilian-FRG nuclear agreement is being used for military purposes; this is impossible because there are safeguards on the entire program.

#### Embraer Denial

PY0208030290 Rio de Janeiro O GLOBO in Portuguese 1 Aug 90 p 19

[Report by Jose Eustaquio de Freitas]

[Text] Sao Jose dos Campos—Embraer [Brazilian Aeronautics Company] Superintendent Ozilio Carlos da Silva has described as "sheer fancy" the remarks made by two professors of the University of Wisconsin, in the United States, on the sale of war materiel and the supply of technical services by Brazilians to the Iraqi Government. According to Silva, this speculation will not have any impact on negotiations for Brazilian companies to purchase two American supercomputers.

Ozilio Silva guaranteed that, after consulting the Pentagon, the U.S. Department of Commerce has already approved the sale of a vectorial processor [processador vetorial] capable of transforming the IBM-3090 computer purchased by Embraer into a supercomputer. He reported that financing and contracts are currently being worked out. Silva expects IBM to deliver the equipment within three months.

The Embraer superintendent recalled that, in any negotiation on complex systems, it is normal for the supplying country to establish conditions of use and clauses protecting technology. The Brazilian Government has already given the U.S. Government guarantees that the Embraer supercomputer will be used only for aerodynamic and structural calculations in aircraft projects.

Ozilio Silva stressed: "Embraer is not involved in any way with nuclear organizations, and it is absurd to assume that it would supply the means to make nuclear calculations of any kind."

Silva emphasized that Embraer and the Brazilian Government are not involved in any way with the deals made in Iraq by the consulting company HOP [expansion unknown], which is owned by Reserve Brigadier Hugo Piva, a former Aerospace Technology Center director. Hugo Piva made an agreement with Iraq to send Brazilian experts to develop missiles; this contract has been in effect since March 1990.

#### Construction of Uranium Enrichment Plant Proposed

90WP0105A Sao Paulo O ESTADO DE SAO PAULO in Portuguese 16 Jun 90 p 11

[Article by Tania Malheiros: "Brazil May Get Uranium Enrichment Plant"—first paragraph is O ESTADO introduction]

[Text] The chairman of the CNEN [National Commission for Nuclear Energy] is planning to send a proposal in that regard to Collor.

Rio de Janeiro—Anselmo Paschoa, acting chairman of the CNEN, announced yesterday that President



Fernando Collor will receive a proposal for development of the project for a plant to produce enriched uranium on a commercial scale outside of the international safeguards. The proposal is being prepared by the working group—coordinated by the Secretariat for Strategic Affairs (SAE) in Brasilia—that is analyzing the orientation of the nuclear program. According to Paschoa, a project has also been proposed for the construction of small-capacity reactors with a potential for generating between 50 megawatts and 300 megawatts.

The idea of building a plant for the production of uranium has received the support of physicist Luiz Pinguelli Rosa of the Brazilian Physics Association. He makes one reservation, however, to the effect that the uranium be of three percent enrichment, sufficient for it to be used as fuel in nuclear power plants. The Navy has been enriching uranium to 20 percent since 1988, a level that would permit the manufacture of an atomic bomb such as the one that destroyed Hiroshima, Japan, in World War II. In Rosa's opinion, it is essential that all nuclear activities be under Congressional safeguards, and Paschoa has given assurances to that effect. "Nothing," he says, "will be done without the approval of Congress."

Pinguelli Rosa disclosed that the Brazilian Physics Association and the Brazilian Society for the Advancement of Science are familiar with the SAE project for the construction of nine reactors. In a joint report, the two organizations declare that three of the reactors would be assigned to the Navy, one to the Army, one to the Air Force, and two to the CNEN. In addition, two could be built at Angra dos Reis. Rosa says that the proposal consists of preliminary conclusions by the working group and that the decision will have to be made by Congress.

The physicist says that the three Navy reactors would cost an estimated \$997 million, and that the reactor for the Air Force—a special reactor for use in a satellite—would cost \$200,000 per year until its completion in 10 years. Pinguelli Rosa also disclosed that the group is proposing continuation of the activities involving the enrichment of uranium by ultracentrifugation—which the Navy has been carrying out at Ipero, Sao Paulo State—and also continuation of the Air Force's research in respect to enrichment by laser. The group is also proposing that Brazil undertake the reprocessing of uranium, which will make possible the extraction of plutonium, the raw material for making the atomic bomb. According to the physicist, these projects would involve a total investment of approximately \$596 million, exclusive of the project for enrichment by laser.

### Angra 3

A group of CNEN technical experts is studying the possibility of building the Angra 3 nuclear power plant—the design and equipment for which have already been purchased—outside the complex that includes Angra 1 and Angra 2. Last week the mayor of Angra dos Reis, Neirobes Nagae, halted work on the two power plants

under the provisions of the Municipal Charter Act, which gives municipalities the power to decide on land use. The decision was annulled, however, by a temporary order obtained in the courts by the Furnas Electric Power company, a state enterprise that operates the plants.

### Suit Demands Building of Radioactive Waste Site

PY1707174190 Rio de Janeiro Rede Globo Television  
in Portuguese 1600 GMT 17 Jul 90

[Text] The Attorney General has filed a civil suit against the Nuclear Energy Council of the federal government and the state of Goias to demand that a storage facility for radioactive waste be built within a definite period of time. Three years after the accident involving radioactive cesium, the waste is still stored in a temporary site, without appropriate security conditions. In the suit, the federal government is charged with neglect of its duty.

### Aeronautics Ministry Reviews Space Research Plan

PY3107171990 Sao Paulo FOLHA DE SAO PAULO  
in Portuguese 27 Jul 90 p A-5

[Report by Roberto Lopez]

[Text] Serious international obstacles and the need to reduce spending have forced the Ministry of Aeronautics to reconsider its space research policy. Minister Socrates Monteiro will no longer insist that the first Brazilian satellite, which is being developed at the National Institute of Space Research (INPE), be launched into orbit by the rocket known as the satellite launching vehicle (VLS), which is being built by the aerospace technology center (CTA) in Sao Jose dos Campos, Sao Paulo.

In 1988, a simple suggestion to this effect would have provoked indignation in the Aeronautics Ministry. The VLS will now continue to be developed, but with another philosophy, which should open the project to partnerships between Brazilian industries and foreign enterprises. In view of this new situation, the CTA arranged the merger of its space activities institute (IAE), which was in charge of the VLS, and the research and development institute, which is also subordinated to the CTA.

Two weeks ago, a group created by the Brazilian Commission of Space Activities began to prepare a list of foreign enterprises that have rockets that could launch the INPE satellite in the first half of 1992. The Scout and Pegasus rockets (of the United States), the European Arianespace enterprise, and the PRC and Soviet suppliers will be included in the list. The group is headed by Brigadier Jose Marconi, of the department of research and development of the Aeronautics Ministry, and is made up of Marcio Barbosa, INPE director, and Henrique Valle, who has the rank of ambassador.

Another problem for the ministry is the fate of the Sao Paulo company Orbita, which was created through a

partnership between Embraer [Brazilian Aeronautics Company] (a plane manufacturer linked with the Aeronautics Ministry), Engesa [specialized engineers, inc], and a group of smaller industries, to produce missiles and rockets. In three years, Orbita has built no rockets. Embraer superintendent Ozilio Silva wanted to keep Orbita as a small-sized enterprise dedicated to engineering systems. After the worsening of Engesa's financial crisis, the Aeronautics Ministry has begun to consider the possibility of Embraer buying part of Engesa. Engesa and Embraer each own 40 percent of Orbita's shares.

The first indication that Engesa might be pulled out of Orbita has been given by Orbita Superintendent Sergio Coeli do Prado, a trusted man of Engesa Vice President Vito de Grassi, who has resigned. Ozilio Silva has refused to make any comments. Through an assistant, he merely said: "The law has prevented Embraer from increasing its participation in Orbita."

The crisis began in 1988, after FOLHA reported that the flight of a Sonda-4 rocket, which was used for testing the VLS, failed in October 1987. Then INPE Director Marco Antonio Ruapp was accused, within the Aeronautics Ministry, of having supplied the information to FOLHA.

The Aeronautics Ministry was following the steps by Ruapp with concern. Aware of the technical difficulties that the IAE was facing with the development of the VLS, the INPE director began to consider the possibility of buying a foreign rocket for launching the first Brazilian satellite. This irritated the Brigadiers. Paulo Camarinha, then chief of the Armed Forces Staff charged Ruapp with attempting to "sabotage" the Brazilian space program. Ruapp was dismissed at the beginning of 1989.

The technical difficulties that have prevented the conclusion of the VLS program are for the most part the result of an international blockade that great powers have imposed on the Third World's access to the field of rockets. In 1989, the CTA turned to France and Germany to solve the problems of the sensitive parts of the VLS. The CTA obtained promises, but the promises were not fulfilled.

## CHILE

### Official Rules Out Use of Nuclear Power Plants

PY2707005890 Santiago EL MERCURIO in Spanish 19 Jul 90 p C-9

[Report by Milton Saavedra M.]

[Excerpts] Talca—National Energy Commission Chairman Jaime Toha Gonzalez has said that the government will have to consider alternative electric power generation systems if the drought continues or if there is another drought in the future. He did rule out, however, the operation of nuclear power plants. [passage omitted]

Toha said that the drought has lasted for three consecutive years and that this has compelled the government to devote careful consideration to the issue, in case the drought continues or in case it happens again the future. "It is necessary to consider other alternatives for producing power in the case of the hydroelectric plants that are more exposed to the drought," he noted.

Concerning the possible use of nuclear power plants, he said that Chile has other resources, like thermoelectric power plants, which are more appropriate. "Nuclear power plants are not among our scheduled projects," he said. [passage omitted]

## CUBA

### Nuclear Cooperation Agreement Signed With Mexico

FL1907140490 Havana Tele Rebelde Network in Spanish 1000 GMT 19 Jul 90

[Text] Mexico and Cuba have signed cooperation agreements in the Mexican capital in the field of the peaceful uses of nuclear energy, and the exchange of experts and scientific and technical information in that area. Officials of the Mexican Secretariat of Energy, Mines, and Parastate Industry and the Cuban Executive Secretariat for Nuclear Affairs signed the document, which in the opinion of both parties will be beneficial and satisfactory for both countries.

At a news conference after the signing of the agreements, the Cuban organization's Executive Secretary Fidel Castro Diaz-Balart expressed the Cuban Government's satisfaction with the arrangement reached with the Mexican authorities.

### Castro's Son Discusses Nuclear Energy

PA2107144790 Madrid EFE in Spanish 2355 GMT 20 Jul 90

[Excerpt] Mexico City, 20 Jul (EFE)—Fidel Castro Diaz-Balart, son of President Fidel Castro Ruz and executive secretary of the Cuban Atomic Energy Commission, said in Mexico today that the Cuban revolution has been an incentive and a stimulus for the United States to pay attention to its southern neighbors.

In statements made to EFE before returning to Havana, the son of the Cuban president said Cuba wants to develop itself and work in peace, not bothering anyone, but we are not going to surrender our achievements. Our people are strong, he said, and we are going to resist until we prevail.

Castro Diaz-Balart, a nuclear physicist, traveled to Mexico to sign with Energy and Mines Secretary Fernando Hiriart three cooperation agreements for the specific and peaceful use of nuclear energy to improve medical and nutritional techniques and to conduct technical and scientific exchanges.

During his stay in this country, the top Cuban official visited various nuclear energy centers such as Laguna Verde.

Castro Diaz-Balart said that Cubans will never emulate certain examples. It has never been our objective to see how many times one country can destroy another. The one with the huge potential to destroy is the United States, not Cuba but the United States, he said.

Still on the previous topic, he said that what threatens the United States is the example of the Cuban people. It is a sovereign, independent, and dignified country, capable of making independent decisions at the very doorstep of the great empire, and they are not pleased with that, he stated.

He added that in the fields of agriculture and nuclear energy, among others, Cuba has endured biological aggressions by the United States.

Castro Diaz-Balart also said that the U.S. Government is troubled by any Cuban achievement in any field, such as the field of biotechnology, which has allowed us to greatly develop our medicines. We have placed some medicines on the market even before the Americans have, he added.

He said it will be very difficult, unless it is by foreign means, to prevent Cuba from developing nuclear energy for peaceful uses, biotechnology, or the pharmaceutical industry.

The son of the Cuban president asserted that his country is developing the nuclear energy industry responsibly and seriously and with a solid basis. He added that there is really no reason for the United States to worry about this.

In this regard, Diaz-Balart said that Cuban scientists have been in touch with U.S. officials who have visited the Cuban nuclear plants and been given all the information they have requested in this field.

Similarly, he added that Cuba has sent experts to the United States and that therefore Cuba has a certain relationship with the United States in that field.

He also stressed that political reasons prevent a larger flow of exchange of scientific information between Cuba

and the United States, and he clarified that Cuba is not the one creating the obstacles.

The Cuban president's son said that the United States is as worried about the nuclear plant that Cuba is currently installing in its territory as Cuba is regarding the number of military installations and nuclear reactors, approximately 12, that are installed in the southern United States. We are much more worried than they are. Therefore, based on this mutual situation we should exchange information and knowledge. [passage omitted]

## MEXICO

### Agreement on Nuclear Energy Signed With Cuba

PA1907034890 Mexico City NOTIMEX in Spanish  
0035 GMT 19 Jul 90

[Text] Mexico City, 18 Jul (NOTIMEX)—Mexico's Secretariat of Energy, Mines, and Parastate Industry, and the Cuban Executive Secretariat for Nuclear Affairs [SEAN] today signed a cooperation agreement on research and advisory services on the peaceful uses of nuclear energy. During a news conference, Alberto Escofet Artigas, under secretary of energy, mines, and parastate industry, said the National Commission on Nuclear Safety and Protection and the National Nuclear Research Institute signed agreements with the corresponding Cuban centers.

Escofet Artigas said that the cooperation agreements include the exchange of experts and scientific and technical information as well as joint projects. SEAN Executive Secretary Fidel Castro Diaz-Balart said the agreements are particularly important "because they are signed by Latin American countries that have been known for developing major nuclear energy projects."

When asked about the advisability of the use of nuclear energy, Castro Diaz-Balart said: "Studies on this type of energy have been sufficiently developed, and because it is estimated that the world's reserves of coal and oil will run out in a short time, it is advisable to develop nuclear energy." He also said that for Cuba, which imports 70 percent of its fuel, nuclear energy is a new alternative, since, he said, "we do not have coal reserves or major rivers to produce electricity." His final comments dealt with Mexico's Laguna Verde nuclear electric plant. He said: "The plant's technology has been tested because more than 360 similar reactors are currently in operation worldwide."

## EGYPT

**Egypt Joins Arab Atomic Energy Organization***NC1707165090 Cairo MENA in Arabic 1410 GMT 17 Jul 90*

[Text] Tunis, 17 Jul (MENA)—The Arab Organization for Atomic Energy [AOAE] has announced that Egypt has joined the organization. In a statement today, the organization announced that Egypt's becoming a member will strengthen the organization's role in science and technology.

Egypt's Ambassador in Tunis 'Ali Mahir presented the documents for Egyptian membership to the AOAE director general today.

It is worth noting that the AOAE is an Arab League-affiliated organization based in Tunis. With Egypt's membership, the organization now embraces 11 Arab states.

## INDIA

**Spokesman Responds to Pakistani Nuclear Talks Offer***BK0907163190 Delhi Domestic Service in English 1430 GMT 9 Jul 90*

[Text] India would utilize the forthcoming talks with Pakistan to establish friendly relations with Islamabad on a firm foundation. A spokesman of the External Affairs Ministry told newsmen in New Delhi that India would approach the talks with open mind and sincerity of purpose.

Replying to a question on the Pakistan foreign secretary's reported statement that Islamabad is ready to discuss the issue of nonproliferation of nuclear weapons with New Delhi, the spokesman said that there is no set agenda for the talks and a specific topic may or may not come up. The Indian high commissioner in Islamabad, Mr. J.N. Dixit, has been called to New Delhi in order to fully prepare for the talks, he added.

Sources in New Delhi say that while the positions taken by both India and Pakistan on nuclear nonproliferation are well known, remarks of the Pakistan foreign secretary might have been intended to appease the Americans.

**Soviet Report on Nuclear Submarine Denied***BK1307161990 Delhi Domestic Service in English 1530 GMT 13 Jul 90*

[Text] India has denied a report which appeared in a section of the Soviet press about the possible delivery of a second nuclear submarine to the Indian Navy. A spokesman of the External Affairs Ministry told newsmen in New Delhi today that there is no proposal under consideration by India either to buy or to lease a second nuclear submarine.

**Helium for Nuclear Field Use Discovered***BK2307120090 Delhi Doordarshan Television Network in English 1600 GMT 22 Jul 90*

[Text] Scientists of the Bhabha Technical Research Center, who are carrying out nuclear study at the variable energy cyclotron center in Calcutta, have discovered the precious element helium in some hot springs in and around Bakeshwar near Calcutta. They have also succeeded in using this helium in nuclear technology.

Doordarshan correspondent Vudhyan Sanyal has the details:

[Begin recording] The helium in its impure form is recovered from these hot springs and is brought to the variable energy cyclotron center in Calcutta. Here the helium is purified in the laboratory. The purified helium is put into the cyclotron which breaks up into charged alpha particles. The invisible particles which carry energy up to 80 million electron volts are taken to the experimental area through a beam transport system. Here the alpha particles cause nuclear reactions and break up the substances under study which may be something like a piece of metal or even a malignant human cell. Scientists watching computer monitors in a separate room have direct access to the results of these nuclear reactions in the experimental area. This indigenously built cyclotron center under the Bhabha Atomic Research Center is the only one of its kind in Asia except those in Japan. Its facilities are used by all the leading research institutes in India.

## ISRAEL

**Arens Returns From Talks With Cheney on Arrow***TA2407091290 Tel Aviv HA'ARETZ in Hebrew 24 Jul p A1*

[Report by military correspondent Eytan Rabin]

[Excerpt] [passage omitted] Defense Minister Moshe Arens returned yesterday from a brief visit in the United States during which he conferred with U.S. Defense Secretary Richard Cheney. The minister's associates described the visit as "beneficial and good from Israel's point of view."

Arens and Cheney discussed issues pertaining to the strategic cooperation between the two countries and to the Middle East. The main topic of the talks was the continuation of the Arrow missile which is being jointly developed by the United States and Israel. A source close to the minister said that Israeli and U.S. working groups will soon begin drafting plans for the second phase of the Arrow project.

U.S. Defense Secretary Cheney accepted Arens' invitation to visit Israel. [passage omitted]



### Science Minister on Iraqi Missile Threat

TA2707060490 Jerusalem Domestic Service in Hebrew  
0405 GMT 27 Jul 90

[Report on remarks by Professor Yuval Ne'eman, energy and infrastructure, science and technology minister, by energy affairs correspondent Mor Suliman; date and place not given—recorded]

[Excerpt] [Suliman] Minister Yuval Ne'eman estimates that Saddam Husayn does not have nuclear weapons, and that since the Iraqi nuclear reactor was demolished, that country found itself further away from developing a nuclear bomb. But Saddam has long-range missiles that can be equipped with chemical weapons. Does Israel have an answer to such missiles?

[Ne'eman] The question is what is meant by having an answer. There is no hermetic umbrella against missiles. The Patriot is far from a hermetic umbrella: It is an anti-aircraft missile that is also capable of hitting certain types of slow missiles.

There is no doubt that, as things look now, the Arrow, which Israel is developing, when completed will be perhaps the most advanced answer in the world; but that will take three, four, or five years. Although the Arrow will not be a foolproof umbrella, it will be sufficient as long as the Middle East does not become a nuclear arena. I mean, if we talk about gases, for instance, the downing of 95 percent of the enemy's missiles would be very good because being hit by five percent is no different from a couple of bombs.

[Suliman] There are still no technical means for the creation of what the minister terms a hermetic umbrella against missiles, but, in his opinion, the correct answer lies in deterrence, which is based on having chemical weapons similar to those possessed by the enemy.

[Ne'eman] In my opinion, we have an excellent answer: threatening the enemy with the same wares. Undoubtedly, the preparation of chemical weapons is no problem nowadays, and, when confronted with such an enemy, it is necessary to prepare the appropriate answer. I have no doubt that even today we can provide an answer to such a threat. [passage omitted]

### LIBYA

### Construction of Bunker Near Al-Rabitah Reported

AU2307123590 Hamburg DER SPIEGEL in German  
23 Jul 90 p 14

[Unattributed report: "Bunker for Libya"]

[Text] Mu'ammar al-Qadhafi wants to construct an underground command center for the military leadership of the country in the Libyan desert next to the poison gas plants of al-Rabitah and Sabha. The FRG Government has passed on confidential information to

West German industry about this project since it is to be expected that the al-Qadhafi people will try to buy important and apparently harmless construction elements in the FRG. For example, there are plans to equip the command center, which is 30 meters below the surface of the earth, with three diesel generators, each with an output of nine megawatts. Bonn believes that the bunker might also serve as a control station for missile attacks. It is said that missiles are being produced near the poison gas plant of al-Rabitah, which was constructed with German assistance.

### PAKISTAN

### French Nuclear Project Unaffected by Bhutto Ouster

AU0908102390 Paris AFP in English 1004 GMT  
9 Aug 90

[Text] Paris, Aug 9 (AFP)—The dismissal of Pakistan Prime Minister Benazir Bhutto will not affect plans by French company Framatome to build a nuclear power plant in the country, the company said Thursday. The contract for the current feasibility study was with the Pakistan Atomic Energy Commission and not the Islamabad government, Framatome said.

French President Francois Mitterrand had signed the authorization in February for the sale of a nuclear power plant to Pakistan.

The Pakistan government was dismissed Monday by President Ghulam Ishaq Khan, for alleged corruption and abuse of power.

### 'Breakthrough' Made in Nuclear Fuel Development

BK2807145690 Lahore THE NATION in English  
28 Jul 90 p 1

[Text] Karachi—Pakistan has made a major breakthrough in the indigenous development of nuclear fuel cycle thanks to the efforts of the Pakistan Atomic Energy Commission (PAEC), it is learnt.

The commission's scientists played an important role in the advancement of chemistry in Pakistan which has made valuable contribution to the indigenous nuclear fuel cycle.

In view of the difficulties experienced in acquiring nuclear reactors and related highly sophisticated technology, the PAEC has chalked out its own strategy for developing these capabilities locally.

Most of the infrastructure required in the nuclear fuel cycle has been established. Pakistan Institute of Nuclear Science and Technology (PINSTECH) at Islamabad has played a key role in the successful implementation of this programme. The commission has also established a close liaison with other national industries and universities to achieve this objective.

The commission has been in the forefront of adopting latest technologies for national growth. As a result the infrastructure for adopting modern chemical trends has been adequately established at various institutes of PAEC.

Several laboratories of the commission have been working jointly with national and international organisations like IAEA [International Atomic Energy Agency], WHO, etc. Strong groups of research exist in and around PINSTECH in analytical chemistry, which employ modern techniques.

These groups have already earned international recognition by playing an active role in some international inter-comparison analytical programmes. Their analytical services to PIA [Pakistan International Airlines],

PAF [Pakistan Air Force] and various industrial and educational institutions in the country have been extremely helpful.

Analytical chemistry has significantly contributed to the country's nuclear programme. It has been particularly useful in the development of flowsheets for (a) exploiting the nuclear minerals and ores (b) separation, characterisation and production of nuclear and structural materials (c) quality control and quality assurance (d) nuclear fuel fabrication and (e) production of radioisotopes and radio-pharmaceutical.

In addition, PAEC scientists have been collaborating with the universities in building up high quality manpower by supervising chemistry students working for M.Sc, M.Phil. and Ph.D. degrees.

## EUROPEAN AFFAIRS

### Austria's Vranitzky Calls for Nuclear Free Zone

AU0208130690 Vienna DER STANDARD in German  
2 Aug 90 p 1

[Text] Venice—On Wednesday [1 August] questions of transportation and environmental protection were the focal issues of the summit of the heads of government and foreign ministers of the states of the Pentagonal Association—Austria, Italy, Yugoslavia, Hungary, and the CSFR—in Venice.

In his talk with his Yugoslav counterpart Ante Markovic, Chancellor Vranitzky urged the closing down of the Slovene nuclear power plant in Krsko. Austria was able to achieve success concerning regular passenger flights. The five states have agreed on speedy measures to disentangle air traffic. Furthermore, Vranitzky announced that he proposed to his counterparts the establishment of a nuclear-power-plant-free zone; however, his proposal met with little approval.

The five states agreed on the expansion of four transit routes (Trieste-Ljubljana-Budapest, Vienna-Budapest-Belgrade, Linz-Graz-Zagreb-Adriatic Sea, Prague-Budapest-Zagreb-Adriatic Sea). It was also pointed out that six high-capacity railroad routes are necessary.

## CANADA

### Darlington Unit 2 Reactor Up to Full Power

90WP0130A Toronto THE TORONTO STAR  
in English 5 Jul 90 p A6

[Text] More than four months behind schedule, the first of four reactors at the Darlington nuclear plant is up to full power. The plant's Unit 2 reactor was increased to full power yesterday and is producing enough electricity for about 500,000 people, said spokeswoman Sue Stickley.

The unit was to be at full power at the end of February but a crack in a 200-tonne generator rotor forced technicians to shut it down for three months.

## FEDERAL REPUBLIC OF GERMANY

### Companies Reported To Aid Iraqi Armament

AU0608083690 Hamburg DER SPIEGEL in German  
6 Aug 90 pp 116-117

[Text] On the day Iraqi troops invaded Kuwait, Swissair plane SR 382 destined for Baghdad was loaded at Zurich Airport. Among the cargo there was a pallet from the Munich aviation and space company MBB [Messerschmidt-Boelkow-Blohm]. One day later, last Friday [3 August], cargo for Iraq arrived in Frankfurt. Kloeckner

Industrial Facilities Company planned to send compressors and machine parts to the Middle East with Lufthansa flight LH 650.

According to the cargo documents, the addressee of the delivery from MBB's helicopter department, was the Iraqi Air Force. Kloeckner's client is the NASSR [expansion not given] Establishment for Mechanical Industries, a department of the War Ministry.

German businessmen are top experts in exports, they cannot be deterred by anything—not by a crisis, not even by war. They always deliver. Concerning the sale of armament technology too, "Made in Germany" has a devastatingly good reputation. Wherever in the world shots are fired, German equipment is very often used.

Not everything is delivered openly. Particularly not to Iraq, where the Germans have been doing good business for quite some time. Thus, in 1985 Kloeckner concluded a contract with NASSR on the construction of a steel mill and a steel foundry. The project with the official name, 3127 Taji, is not a normal company. According to findings by Western intelligence services, it is a facility which belongs to a gigantic cannon factory.

Taji, near Baghdad, is part of the largest armament complex in the Middle East. For some months, the public prosecutors have been dealing with the facility, which general agent Ferrostaal has declared to be an all-purpose forge and which was approved by the responsible federal office in Eschborn.

When the Taji project became known a month ago as a result of a DER SPIEGEL (28/1990) report, the Foreign Ministry reacted rather helplessly. According to the phraseology recommended for use by the German embassies, "In the future too," the FRG Government will "continue to do everything to prevent armament efforts in the Middle East from being supported by illegal German deliveries."

This time Bonn cannot simply make do with such phrases. The affair regarding the poison gas factory in Libya's al-Rabitah has made the world public sensitive. At least, it was still possible to present al-Rabitah as the individual action of a dubious chemicals producer carried out with the aid of some managers of the Salzgitter concern.

The arms deal with Iraq, on the other hand, is a mass offense; companies from all areas of German industry are involved in it. Be it in the construction of missiles or cannons, the production of poison gas or biological combat agents, or even the development of a nuclear bomb, German experts are the ones in charge everywhere.

The same game over and over again. Deliveries are quick, investigations are hesitating and generous. Everything can be sold if it is just packed and declared in the right way. The Iraqi case could probably be the saddest chapter in the evil history of FRG arms exports.

Case number one: For the Saad 16 project in the Iraqi town of Mosul, German companies developed missiles and chemical weapons. The general agent was the Gildemeister Projecta GmbH (Gipro) from Bielefeld. Many companies provided subcontracted parts—companies such as MBB, Carl Zeiss, or Degussa. Mosul is the research center of the Iraqi military.

Case number two: The H and H Metalform company from the Muensterland region has been involved in dubious deals with Iraq for years. It provides help for the enrichment of uranium for Husayn's bomb. In mid-1987, H and H inquired via the then branch office of NASSR, Meed International in London, whether Iraq would be interested in the delivery of drop tanks. By means of such drop tanks, chemical weapons can be used from airplanes.

Case number three: The Darmstadt public prosecutor's office and the Cologne Customs Criminal Investigation Office have been investigating the Karl Kolb GmbH from Dreieich in Hesse because of a highly explosive delivery to Iraq. Allegedly, the company delivered know-how and facilities for laboratories in which Iraq produced the poison gas with which thousands of Iranians and Kurds were killed later during the Gulf War.

In case number four, the Taji project, far more than 100 German companies seem to be involved, according to findings made by the investigators so far. The cannon factory, in which about 1,000 pieces of medium and heavy artillery of calibers 105 and 203 mm are produced annually during the start-up phase, has been completed recently. Close by, strictly guarded by the military and surrounded by watchtowers, an ammunition factory is being operated—also with the involvement of German companies. Artillery rounds are stacked in the open; in the Kloeckner factory obsolete tanks are currently being melted down.

The investigators found the largest amount of incriminating material in the offices of the general agent Ferrostaal, which is headed by Hans Singer. In dozens of company files of the MAN subsidiary, officials found clues to a number of other MAN companies. SMS Hasenclever GmbH delivered a forging press, and a MAN company in Nuremberg delivered a 50-tonne crane.

According to latest findings, it is also certain who delivered the technical equipment for boring the cannon barrels. The Ravensburg Machine Factory and TBT Deep Well Drilling Technology, half of which belongs to the Gildemeister concern, increased their turnover with these orders.

The most refined technical equipment was offered: The lathes are equipped with computer control from Siemens. Up to three programming instruments from Siemens (Type PG 685) were temporarily used for fine adjustment.

The production of cannon barrels and ammunition requires top precision work. Therefore, Ferrostaal brought the Buderus company, an expert in casting technology, into the business. Ruhrgas from Essen is also present in Taji. Its subsidiary, LOI, Industrial Furnace Installations, delivered special furnaces for barrels with a maximum length of 15 meters and hardening plants.

Such deals with Iraq pay off; they are practically gilded with a "trembling bonus." The Leybold company from Hanau contributed three recasting plants worth more than 12 million German marks [DM] to Taji. For almost two identical plants, which Leybold sold to central England about two years ago, the Hanau company only got about DM1.5 million.

In return for such high payments the companies accept some inconveniences. The area of Taji, which is several square km large, is strictly guarded by soldiers; workers are observed at all times. The forging complex and also the other factory halls in sight are surrounded by walls.

The strict guarding is not only to prevent espionage and sabotage, but also to protect the people working there. In June 1988, the Iraqi intelligence service intercepted a telegram by Kurdish leader Massud el-Barsani [spelling as published]. According to this telegram, his followers were supposed to hunt down people working for Kolb GmbH.

The telegram says that the company has equipped the Iraqi Army with chemical weapons and is thus an "accomplice in the genocide of the Kurdish people." Its representatives in the country should be "kidnapped or executed."

Since then, Dictator Husayn has been worried about the lives of his many helpers and has had them put under special protection. Whether in the hotel, in the camp, or on the construction site, at least the Germans are safe from Husayn.

#### **Kruemmel Nuclear Power Station Leaks Waste**

LD2307170290 Hamburg DPA in German 1556 GMT  
23 Jul 90

[Excerpt] Hamburg (DPA)—Radioactive waste water has run out through a leak in the cooling system of the nuclear power station Kruemmel (Schleswig-Holstein). According to the Kiel Social Ministry, there is no danger for people in the area. The authority for reactor security assessed the incident as an accident of the highest category "S" (immediate report) and informed the environment minister in Bonn. [passage omitted]



## FINLAND

### Possible Halt to Shipping Nuclear Waste to USSR

#### Replacement Sites Ready

90WP0111A Helsinki HUFVUDSTADSBLADET  
in Swedish 29 Jun 90 p 5

[Article by Magnus Londen: "Russia Says No Thanks to Our Radioactive Waste?"]

[Text] Boris Yeltsin, the president of the Russian Republic and Gorbachev's obstinate rival, once again has challenged the overall Soviet Government. On Wednesday he gave orders that there is to be a freeze on all new nuclear power plants from the end of the year, the AP news agency reports.

The Russian Parliament has issued a directive regarding further measures to improve security in nuclear power matters. Most startling for Finland is the call for a "ban on underground storage of radioactive waste from other Soviet republics—or from abroad."

#### Finnish Waste to Chelyabinsk

In 1989 Finland shipped 56 tons of radioactive waste to Chelyabinsk in the Russian Republic. That is where all radioactive waste from the Lovisa nuclear power plant is given permanent storage. But if Yeltsin is to be taken seriously, which is the case nowadays, that will come to an end.

"We have an agreement between Finland and the Soviet Union for storage of radioactive waste. The agreement is valid for as long as Lovisa I and II are operational. As far as I understand, this agreement continues to apply," says information chief Antti Ruuskanen at Imatran Voima.

He is very surprised over the news and says that the company has not been given any information by either the Soviet or the Russian Government in the matter. A news telegram is all it received.

The Soviet Union is the only country in the world which has accepted radioactive waste from another country for permanent storage. Will Imatran Voima try to find another Soviet republic to store the waste, or what is the strategy?

"There is only one natural solution, and that is for it to be stored in Finland. At the Lovisa nuclear plant one-third of the uranium is replaced each year, which results in 12 tons twice a year."

Until now, the procedure has been for the waste first to be stored for five years in Finland and then to be shipped to Chelyabinsk. According to plans, one shipment will still be transported this year. But Ruuskanen does not want to speculate on whether or not this will happen.

"We have our agreement, but since so much is changing in the Soviet Union, some surprises may occur."

#### Olkiluoto Not Affected

At the Olkiluoto nuclear power plant this surprising news is not even known. But the managing director, Magnus von Bonsdorff, stresses that the news does not affect the activity of the power plant at all, since Olkiluoto already stores all its waste in Finland.

"We now have 415 tons stored, and over the planned 30-year period this will increase to 1,200 tons of uranium."

What is involved is so-called interim storage. The rods are stored at the Olkiluoto power plant. Just where the uranium rods will get their permanent storage is not yet completely clear. According to a government decision, Olkiluoto must see to it that a permanent storage site is obtained. For this reason, bedrock studies are being undertaken at five places in Finland: Kuhmo, Hyrynsalmi, Sievi, Konginkangas, and Olkiluoto. Financing will not be a problem, according to von Bonsdorff.

"We have already collected not quite 2 billion markkas for this purpose."

"It is our moral obligation to future generations to find a permanent storage site," he says.

#### Paper Views Impact

90WP0111B Helsinki HUFVUDSTADSBLADET  
in Swedish 29 Jun 90 p 2

[Editorial]

[Text] When the new president of the Russian Republic, Boris Yeltsin, declares a halt to the construction of new Soviet nuclear power plants on Russian territory, at least until there is a program of how to solve the waste problems, it probably confirms that we will not get a new giant power plant east of the border.

When he declares that the Russians are poorly equipped to process and store (at least underground) radioactive waste from the other Soviet republics—and from abroad—it might result in several unwelcome aspects for us, if this decree affects the agreements, so convenient for us, regarding the Lovisa waste.

And if that is not enough, it is not that easy, unfortunately, to say "we told you so" about either the one or the other matter in the problematic Russian nuclear power issue.

A growing nuclear energy shortfall in the Soviet energy supply could affect our eastern import of energy in various forms.

A Russian nuclear issue could become a nuclear issue for us as well.

### Leak Closes Loviisa Nuclear Power Unit

*LD2607180390 Helsinki Domestic Service in Finnish  
1600 GMT 26 Jul 90*

[Text] The Number Two unit at the Loviisa nuclear power station will have to be shut down this evening. The reason is a leak found in the seal of a valve belonging to the primary circuit. The leak will not cause any immediate danger to the safety of the plant, but the inspection and repairing of the leaking valve require the plan to be shut down, it is stated by the Radiation Protection Center. The leak was found today in one of the deck seals of a back pressure valve of the Number Two unit. Slightly radioactive water leaked through the crack into the internal water collection system of the plant. According to the estimate of Imatran Voima Oy [power company], repairing the valve will take a couple of days. Restart of the Number Two unit will begin next week. The unit will be shut down again in three weeks because of the annual service. The Number One unit at Loviisa and both units at Olkiluoto are functioning normally.

## FRANCE

### EDF's U.S. Uranium Purchase Finalized

*90WP0131A Paris LES ECHOS in French  
25 Jul 90 p 4*

[Article by Mg. L.: "EDF [French Power Company] Becomes Uranium Producer"]

[Text] EDF [French Power Company] yesterday purchased Malapai Resources, a uranium-producing subsidiary of the American group Pinnacle West Capital Corporation. The purchase, which still needs a green light from U.S. officials, has already been approved by French authorities. The electric utility is paying \$38 million (about Fr220 million) for uranium deposits in Wyoming and Texas which have natural uranium reserves estimated at 10,000 tons.

It is a first for EDF, though the utility has a partner in the venture. Once the Malapai deal goes through, the mineral holdings will be merged with those owned by the U.S. firm Total into a company whose stock will be held jointly by EDF (21 percent) and the oil company (79 percent). By going into uranium production—a move not likely to please COGEMA [General Nuclear Materials Company], France's biggest producer—EDF hopes to accomplish several objectives. First of all, it wants to have cost-competitive reserves in the ground, so it will not be at the mercy of companies in the mining industry, where a wave of mergers and takeovers is underway, since improved economic conditions will enable those companies to make a killing once the decision is made to expand the nuclear program.

Second, by controlling Malapai Resources EDF is able to maintain its current supply diversification. EDF already had a contract with Malapai that was due to expire in 1994, but the arrangement was threatened by problems in

the parent company. Thanks to this takeover, the establishment will be able, at least temporarily, to lower its dependence on U.S. suppliers, reduce its stocks, and at the same time honor its commitments to other Malapai customers.

### Nuclear Waste Reprocessing Contract With FRG

*90WP0125A Paris LIBERATION in French  
6 Jul 90 p 8*

[Article by Helene Crie]

[Excerpt] It was a big day for the General Nuclear Materials Company (COGEMA), subsidiary of the Atomic Energy Commission (AEC). Its president, Jean Syrota, will announce today that contracts have just been signed with German electric companies for the reprocessing in France of nuclear fuel from the FRG.

For the plant in La Hague, the biggest in the world in terms of reprocessing capacity (1,600 tons a year starting in 1992) and threatened with running on no load by the year 2000, this arrival of new clients is providential. However, it could be costly because to initial these trade agreements, COGEMA had to turn them into veritable lures for potential clients. For example, the clause on breach of contract as it reads in the sample contract we obtained is generous, to say the least, in its financial provisions: "If operation of the reprocessor (COGEMA) is prevented by German legislation or by political or regulatory decisions (Editor's note: if the FRG decides to stop reprocessing fuel), then fuel not yet processed will be returned to the (German electric) company and the reprocessor will refund to the company all sums paid which do not constitute payment for services already rendered." In sum, the customer is guaranteed against a change in its government's energy policy.

If this article exists, it is indeed because the future of nuclear power is uncertain in West Germany. Under the combined pressure of the Social Democrats and the Greens, debate on the suitability of reprocessing is raging. In August, the German Christian Democratic minister of the environment even set up a commission to study the possibility of direct storage of used fuel. Without this highly protective clause, German electric companies would not have run the risk of signing.

COGEMA will undoubtedly reply that reciprocity is anticipated, but who would seriously expect France to give up operating its costly plant in La Hague (the investment for expansion exceeded Fr58 billion, almost as much as the tunnel under the Channel!) when the entire French electric strategy rests on nuclear fuel and fuel reprocessing?

Another gift clause concerning nuclear waste generated by reprocessing: "Waste will only be sent back if it can be stored in accordance with regulations drafted by the appropriate national authorities." No one is unaware that antinuclear forces will oppose the opening of new storage sites in the FRG. If no regulated site could continue to take in highly radioactive waste in the FRG,

France could therefore be forced to do so. Moreover, concerning waste that is of average or low radioactivity, the contract states that "satisfactory agreements may be reached for waste not sent back." In other words, if the Germans pay, we can indeed store the waste in question.

According to Michael Schneider of the WISE AGENCY, an information and documentation service specializing in energy, who passed this document to us, "inasmuch as the customer can cancel his commitments at will, this contract must be viewed as a contract for the storage rather than the reprocessing of used fuel."

With the agreements announced today, La Hague has landed its first foreign clients since the startup of the new plant, initially reserved for non-French used fuel. After all, while construction of this brand-new plant, UP3 (UP1, the small first French reprocessing plant, is in Marcoule in Gard, while UP2, the first phase of La Hague, went into service in 1966, and UP3 received official authorization to start up in December) was theoretically financed by foreign electric companies (11 Japanese, 14 German, four Swiss, one Belgian, and one Netherlander), the latter can guarantee it work only until the year 2000.

For COGEMA, the future became clear when the FRG decided in the spring of 1989 to give up construction of its own plant in Wackersdorf, a plant designed to reprocess between 350 and 500 tons of fuel a year. The "joint statement on cooperation between France and the Federal Republic of Germany in the field of the peaceful use of nuclear energy," presented on 6 June 1989 in Bonn by Roger Fauroux and German Minister of Environment Klaus Topfer, finally relieved COGEMA. Deprived of Wackersdorf for reprocessing their own fuel, German electric companies should be forced to turn to La Hague. As for the Japanese, who in 10 years will have their own plant with a capacity of 1,000 tons, they could also steal France's customers, Jean Syrota warned a year ago, "because it is not certain that their reprocessing capacity will be sufficient to meet their needs." [passage omitted]

#### **Nuclear Agency Criticized for Late Detection**

AU0908140690 Paris AFP in English 1353 GMT  
9 Aug 90

[Text] Paris, Aug 9 (AFP)—The official French nuclear safety agency criticised nuclear authorities on Thursday [9 August] for delays in detecting a problem at a nuclear plant in central-eastern France which is currently shut down for repair.

The Creys-Malville plant, which stopped producing electricity on July 3, is unlikely to resume operations for several months, plant officials said Thursday.

The Central Safety Service of Nuclear Installations notably criticised Electricite de France (Electricity of France), responsible for operating France's 55 nuclear plants, for failing to detect a sodium oxydation problem at Creys-Malville during a two-week check.

The plant officials were also censured for waiting until July 3 to shut down Creys-Malville while the flaw had become more serious since June 20. The Creys-Malville plant has been plagued by shut-downs since its 1986 opening.

Thursday's criticism came as several other French nuclear plants reported incidents, which they described as minor, over the last few days.

At the nuclear station in Golfech, southwest France, workers forgot to close a safety door for more than a week, while in Paluel, in the west, the station shut down automatically after an incident involving a safety valve. No radiation escaped to contaminate staff or the environment.

Two physicists working at a nuclear research institute in southeastern Grenoble were meanwhile contaminated by above-normal radiation levels after a faulty manoeuvre, the Leo Langevin institute said.

The pair received doses of two radiation rems, while five rems is the annual norm for humans.

### **SPAIN**

#### **Vandellos 2 Nuclear Station Restarts**

LD1107185790 Madrid Domestic Service in Spanish  
1700 GMT 11 Jul 90

[Text] At 1835 today the Nuclear Safety Council authorized the Vandellos 2 nuclear power station to begin operating, according to sources at the power station. The process to bring the power station back to full production will last some eight hours, during which the power is gradually increased. As you will recall, the Vandellos 2 nuclear power station was affected by an incident in the early hours of last Sunday morning, when there was a leak of radioactive steam in the primary cooling circuit, although it did not escape into the atmosphere.

### **SWITZERLAND**

#### **Illegal Nuclear Exports to Iraq Probed**

LD0908162290 Berne International Service in English  
1530 GMT 9 Aug 90

[Text] Swiss Justice authorities are investigating alleged illegal shipments of nuclear material from Switzerland to Iraq.

A spokesman for the Federal Prosecutor's Office in Berne said an inquiry was under way but declined to specify the material involved or to identify any of the firms being investigated.

The spokesman said the authorities suspected that nuclear material or technology were exported to Iraq without the special permits required by Swiss law. He said no nuclear exports to Iraq had been authorized in recent years.

The spokesman added that the investigation had no connection to the current crisis in the Gulf. International arms experts say Iraq is close to being able to build its own nuclear weapons.

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